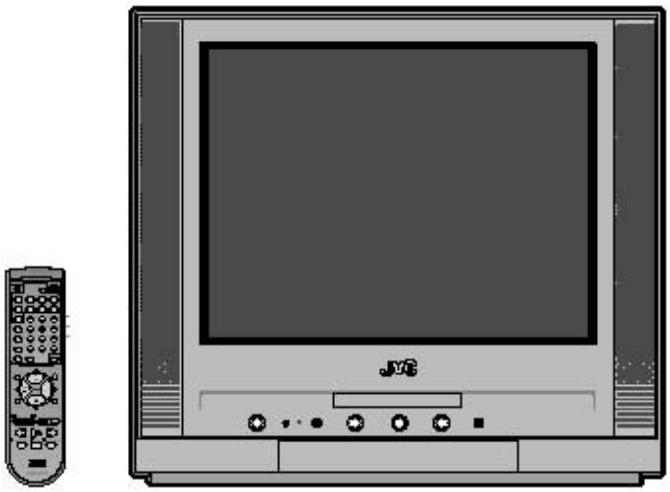
JVC

SERVICE MANUAL

TV/DVD COMBO

AV-20FD22



CONTENTS

■ SPECIFICATIONS ····· 2
★ OPERATING INSTRUCTIONS (APPENDED)
■ SAFETY PRECAUTIONS ····· 3
■ SPECIFIC SERVICE INSTRUCTIONS ····· 7
■ SERVICE ADJUSTMENTS ····· 13
■ GUIDE FOR REPAIRING ····· 18
★ STANDARD CIRCUIT DIAGRAM (APPENDED)
■ PARTS LIST ····· 32

COPYRIGHT © 2001 VICTOR COMPANY OF JAPAN, LTD.

No. 51821
Mar. 2001

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter the Service Mode, press both set key and remote control key.
Press both the VOL. key and remocon keys simultaneously for more than 1 second.
Press both the STOP key and remocon keys simultaneously for more than 3 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory on TV. NOTE: No operation at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	3	Initialization of the factory on DVD. NOTE: The operation will work only with STOP mode at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	6	POWER ON total hours are displayed on the screen. Refer to the "CONFIRMATION OF USING HOURS". NOTE: No operation at DVD mode. Can be checked of the INITIAL DATA of MEMORY IC on TV. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC". NOTE: No operation at DVD mode.
VOL. (-) MIN	8	Writing of EEPROM initial data on TV. NOTE: No operation at DVD mode. Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
STOP	7	Releasing of PARENTAL LOCK. NOTE: The operation will work only with STOP mode at DVD mode.
STOP	9	Self-Diagnosis will operate. Refer to the "SELF-DIAGNOSIS"

CONFIRMATION OF USING HOURS

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

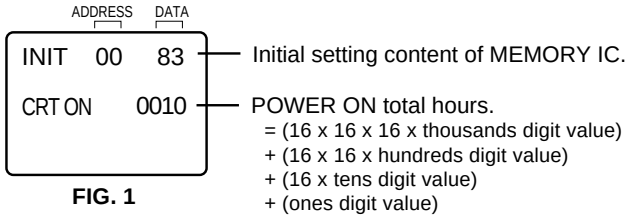

ADDRESS
DATA
INIT 00 83
CRT ON 0010
Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

FIG. 1

SELF-DIAGNOSIS

The Self-Diagnosis function will operate when both STOP button on the set and Channel button **(9)** on the remote control are pressed simultaneously (for more than 3 seconds) at DVD LOGO screen with No Disc.

NOTE: No diagnosis of FL CHECK on the TV/DVD Player.

Diagnosis Items	Diagnosis Method/Result	Assumed Defects
1. FL CHECK	"FL" will appear on the TV Monitor. Then all indicators will turn on and go out. All light up (3 seconds) ---> All go out (1 second) ---> All light up all the time Sight check if all the indicators will turn on or go out.	AV PCB Power Block
2. SRAM CHECK	"SRAM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB
3. VIDEO ENCODER CHECK	Color bar and Black/White bar will appear alternately on the TV Monitor. Color bar (1 second) ---> Black/White bar (1 second) ---> Color bar (1 second) Sight check if correct color appears or Color and Black/White bar appears alternately.	Syscon PCB Power Block
4. TRAY CHECK	"TRAY : OPEN" will appear on the TV Monitor. Then the tray will be opened completely and "TRAY : CLOSE" will appear. Then the tray will be closed. Sight check if the tray opens or closes correctly.	Syscon PCB Drive Unit Power Block
5. EEPROM CHECK	"EEPROM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB
6. AUDIO DAC CHECK	"ADAC" will appear on the TV Monitor. Then the pink noise will output from RCA. Lch ---> Rch ---> Lch+Rch Check by ear if audio outputs correctly.	Syscon PCB AV PCB
7. SDRAM	"SDRAM" will appear on the TV Monitor. Then non-specific data will be read and written on the non-specific address. If no problem on read and write, "OK" will appear. If any problems, "NG" will appear.	Syscon PCB

After the diagnosis, the results only for the SRAM, EEPROM and SDRAM will appear on the TV Monitor.
In case of OK, "PASS" will appear for the each diagnosis.

RESULT
PASS : SRAM
PASS : EEPROM
PASS : SDRAM

To finish the Self-Diagnosis, turn off the power on the Main unit.

NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	F9	43	05	01	F1	23	27	F7	81	CD	D9	3F	3F	40	61	63
10	64	26	67	69	2A	6B	6C	6D	6E	6F	70	71	52	72	53	73
20	54	74	55	75	75	56	56	76	76	57	57	77	77	58	58	78
30	78	59	59	79	79	5A	5A	7A	7A	5B	5B	7B	7B	5C	5C	7C
40	7C	5D	5D	7D	7D	5E	5E	7E	7E	5F	5F	5F	7F	7F	BF	B7
50	B9	AC	A1	C5	00	C7	00	00	00	97	AF	7F	A8	B8	B4	7A
60	D9	B0	84	88	9A	9F	2A	5A	00	00	00	10	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.

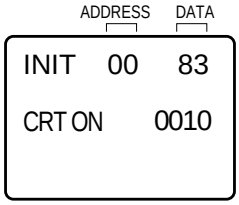


Fig. 1

3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICE ADJUSTMENT

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
  Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.
  Remove all old silicon before applying new silicon.

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. AC Voltmeter
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

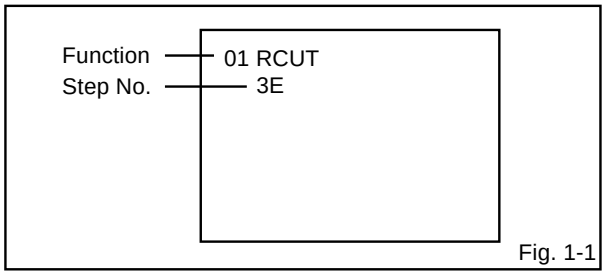


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button **(1-0)** on the remote control to select the options shown in **Fig. 1-2**.
3. Press the TV MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
01	R CUT OFF	37	BRI. AV(CENT.)
02	G CUT OFF	38	BRI. AV(MAX)
03	B CUT OFF	39	BRI. AV(MIN)
04	G DRIVE	40	COL. AV(CENT.)
05	B DRIVE	41	COL. AV(MAX)
06	BRIGHTNESS(CENT.)	42	COL. AV(MIN)
07	BRIGHTNESS(MAX)	43	TINT AV
08	BRIGHTNESS(MIN)	44	SUB CONTRAST AV
09	COLOR(CENT.)	45	CONT. AV(CENT.)
10	COLOR(MAX)	46	CONT. AV(MAX)
11	COLOR(MIN)	47	CONT. AV(MIN)
12	TINT	48	SHARPNESS AV
13	SUB CONTRAST	49	BRI. DVD(CENT.)
14	CONTRAST(CENT.)	50	BRI. DVD(MAX)
15	CONTRAST(MAX)	51	BRI. DVD(MIN)
16	CONTRAST(MIN)	52	COL. DVD(CENT.)
17	SHARPNESS	53	COL. DVD(MAX)
18	RGB CONTRAST	54	COL. DVD(MIN)
19	H POSITION	55	TINT DVD
20	V POSITION	56	SUB CONTRAST DVD
21	V SIZE	57	CONT. DVD(CENT.)
22	V LINEARITY	58	CONT. DVD(MAX)
23	V S CORRECTION	59	CONT. DVD(MIN)
24	EW PARABOLA CORR.	60	SHARPNESS DVD
25	EW TRAPEZIUM CORR.	61	BRI. GAME(CENT.)
26	H SIZE	62	BRI. GAME(MAX)
27	V EHT	63	BRI. GAME(MIN)
28	H EHT	64	CONT. GAME(CENT.)
29	RF AGC	65	CONT. GAME(MAX)
30	V CENTERING	66	CONT. GAME(MIN)
31	CORNER CORR. TOP	67	TUNING V MUTE
32	CORNER CORR. BTM	68	POWER ON V MUTE
33	OSD H	69	INPUT LEVEL
34	FM LEVEL	70	SEPARATION L
35	TEST PWM	71	SEPARATION H
36	TEST TONE CONTROL	72	CUT OFF

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP401**.
4. Adjust the **VR502** until the digital voltmeter is 111 ± 0.5V.

2-2: RF AGC

1. Receive the VHF HIGH (63dB).
2. Place the set with Aging Test for more than 15 minutes.
3. Connect the digital voltmeter between the **pin 5 of CP101** and the **pin 1 of CP101**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(29)** on the remote control to select "AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.7 ± 0.05V.

2-3: CUT OFF

1. Adjust the unit to the following settings.
   G DRIVE=3F, B DRIVE=3F, R CUT OFF=7F, G CUT OFF=7F, B CUT OFF=7F
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(72)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RCUT".
5. Using the VOL. UP/DOWN button on the remote control, adjust the RCUT.
6. Press the CH. UP/DOWN button on the remote control to select the "GDRV", "BDRV", "GCUT" or "BCUT".
7. Using the VOL. UP/DOWN button on the remote control, adjust the GDRV, BDRV, GCUT or BCUT.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-5: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(19)** on the remote control to select "HPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the right and left screen size of the vertical line becomes the same.

2-7: HORIZONTAL SIZE

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "WIDS".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes 10 ± 2%.

2-8: VERTICAL LINEALITY

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "VLIN".
4. Press the VOL. UP/DOWN button on the remote control until the upside and downside screen size of the horizontal line becomes the same.

2-9: VERTICAL SHIFT

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "VPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

2-10: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-9.

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "VSIZE".
4. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
5. Receive a broadcast and check if the picture is normal.

2-11: PARABOLA CORR

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "DPCS".
4. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.

2-12: TRAPEZIUM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "KEYS".
4. Press the VOL. UP/DOWN button on the remote control until the both vertical lines of the screen become parallel.

2-13: CORNER CORR TOP

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "CNRT".
4. Press the VOL. UP/DOWN button on the remote control until the upper section of the both ends vertical lines are straight.

ELECTRICAL ADJUSTMENTS

2-14: CORNER CORR BOTTOM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "CNRB".
4. Press the VOL. UP/DOWN button on the remote control until the bottom section of the both ends vertical lines are straight.

2-15: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "OSD".
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-1)**

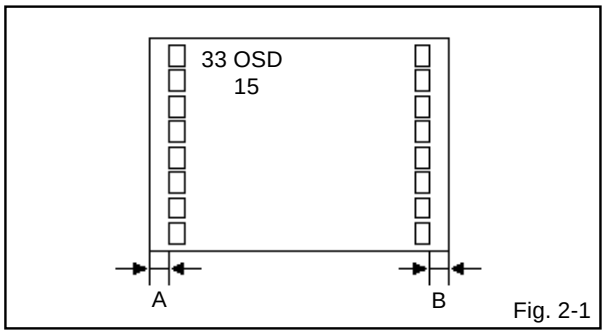


Fig. 2-1

2-16: LEVEL

1. Receive the VHF HIGH (70dB).
2. Connect the AC voltmeter to **TP901**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(69)** on the remote control to select "LVL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 2mV.

2-17: SEPARATION L/H

1. Receive the stereo signal (L=2KHz, R=400Hz).
2. Connect the AC voltmeter to **AUDIO OUT JACK** though stereo filter (L=400Hz, R=2KHz).
3. Press the AUDIO button on the remote control to set to the STEREO mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(70)** on the remote control to select "SEPAL".
5. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
6. Press the CH UP button once the set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
8. Press the CH DOWN button once the set to "SEPAL" mode.
9. Repeat step 5 to step 8 several times.
   The output difference of the between with Filter and without Filter should be more than 20dB for both L and R.

2-18: SUB BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "BRTC".
4. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT button on the remote control to set to the AV mode.
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(37)** on the remote control to select "BRTCA".
9. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
10. Press the TV/DVD button on the remote control to set to the DVD mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(49)** on the remote control to select "BRTCD".
12. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-19: SUB CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "CNTX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "6F"
3. Press the INPUT button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(46)** on the remote control to select "CNTXA".
5. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "71"
6. Press the TV/DVD button on the remote control to set to the DVD mode.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(58)** on the remote control to select "CNTXD".
8. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "71"

ELECTRICAL ADJUSTMENTS

2-20: SUB TINT CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP803**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select "TNTC".
5. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT button on the remote control to set to the AV mode.
8. Using the remote control, set the brightness, contrast, color and tint to normal position.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(43)** on the remote control to select "TNTCA".
10. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.
11. Press the TV/DVD button on the remote control to set to the DVD mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(55)** on the remote control to select "TNTCD".
13. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.

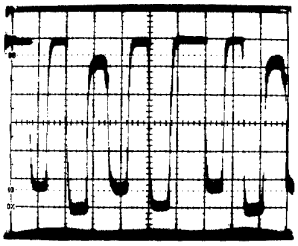


Fig. 2-2

2-21: SUB COLOR CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscop to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "COLC".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 120 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT button on the remote control to set to the AV mode.
9. Using the remote control, set the brightness, contrast, color and tint to normal position.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(40)** on the remote control to select "COLCA".
11. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
12. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 120 ± 5% of the white level. **(Refer to Fig. 2-3)**
13. Press the TV/DVD button on the remote control to set to the DVD mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(52)** on the remote control to select "COLCD".
15. Press the VOL. UP/DOWN button on the remote control to increase the step numbers by 3 steps to the AV.

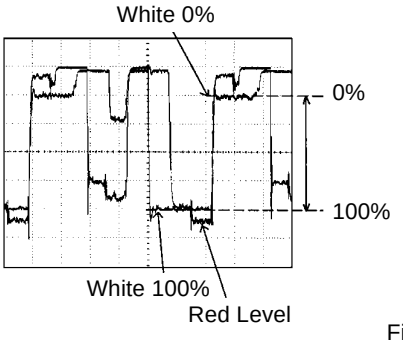
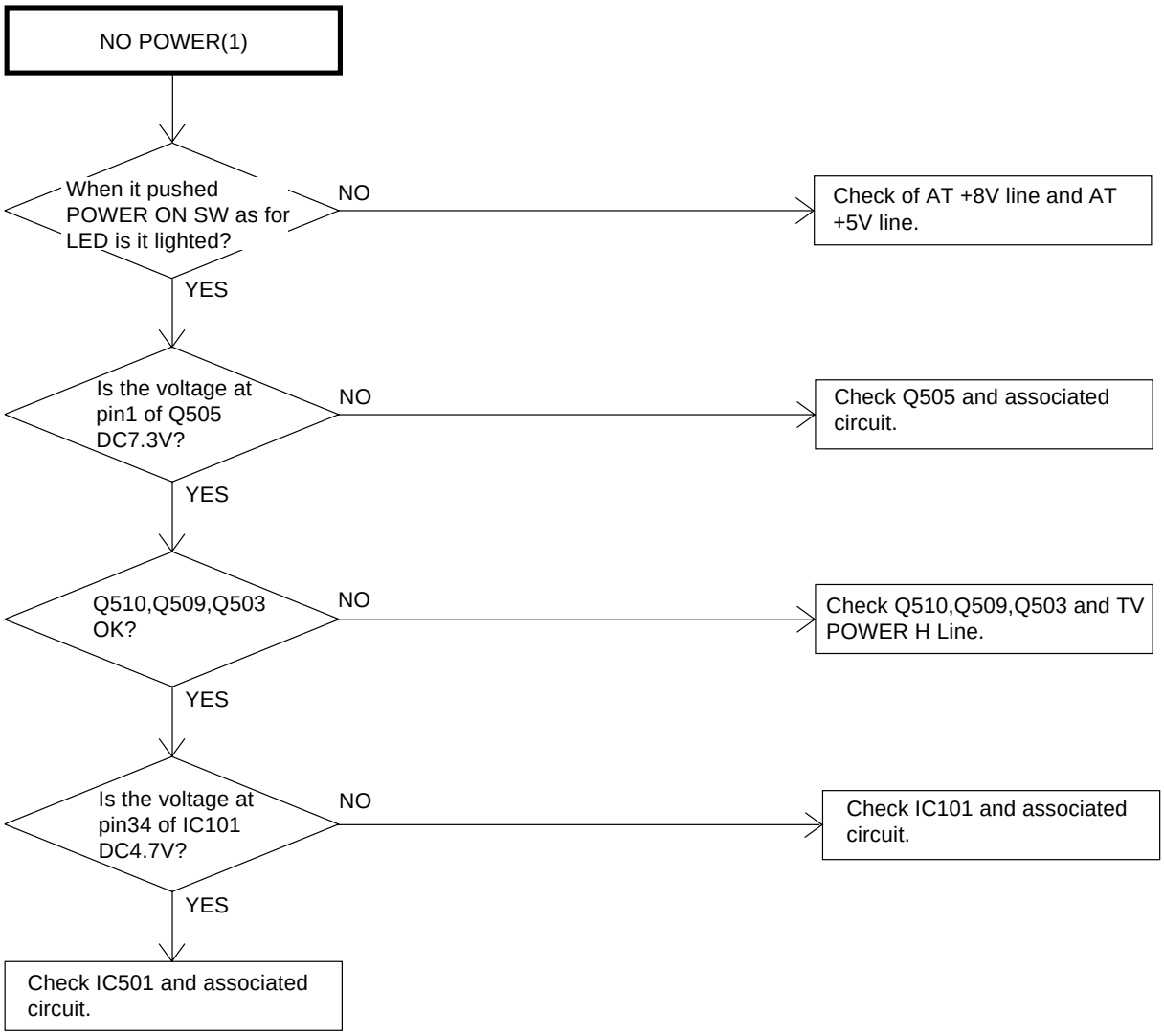


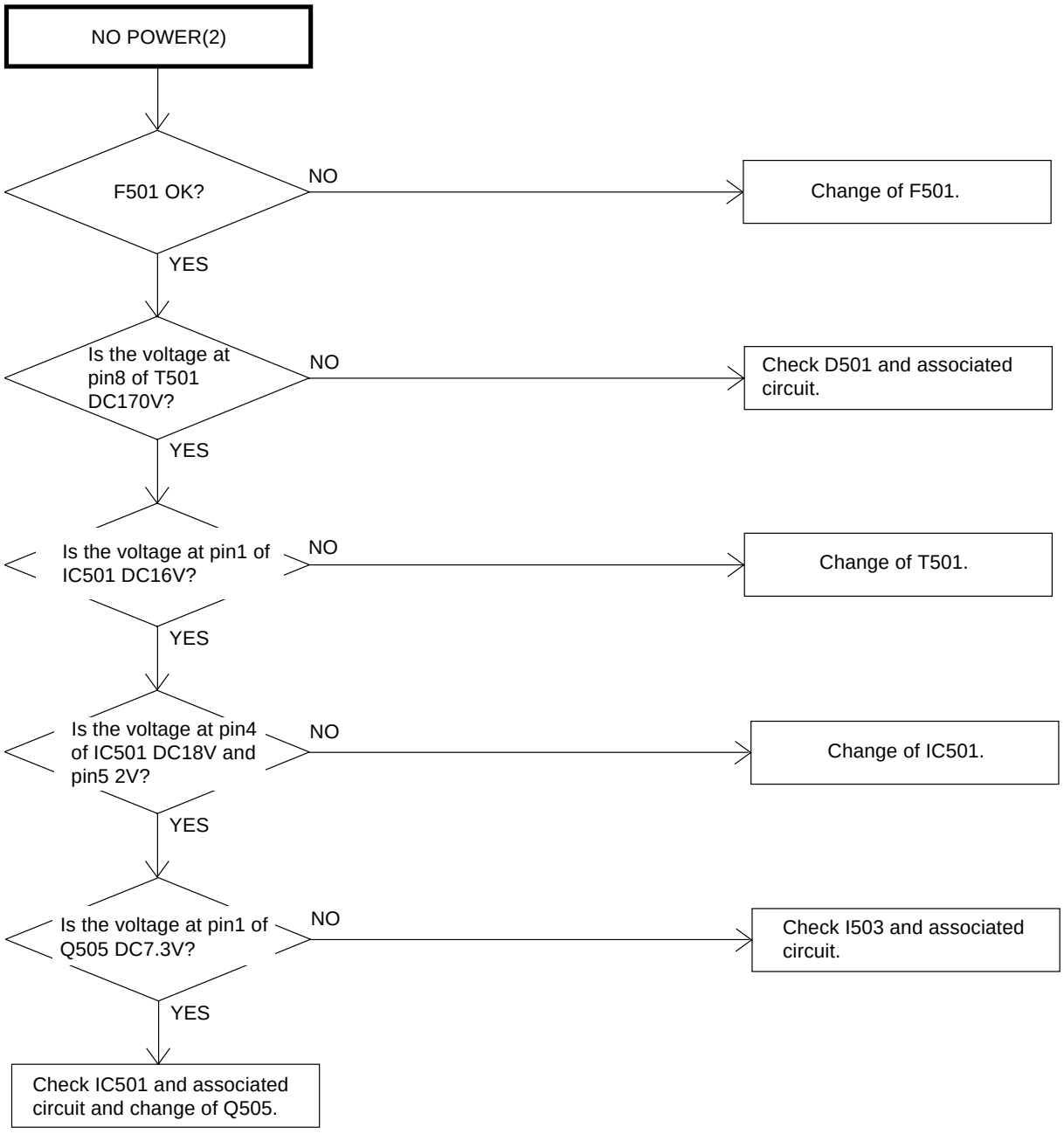
Fig. 2-3

TROUBLESHOOTING GUIDE

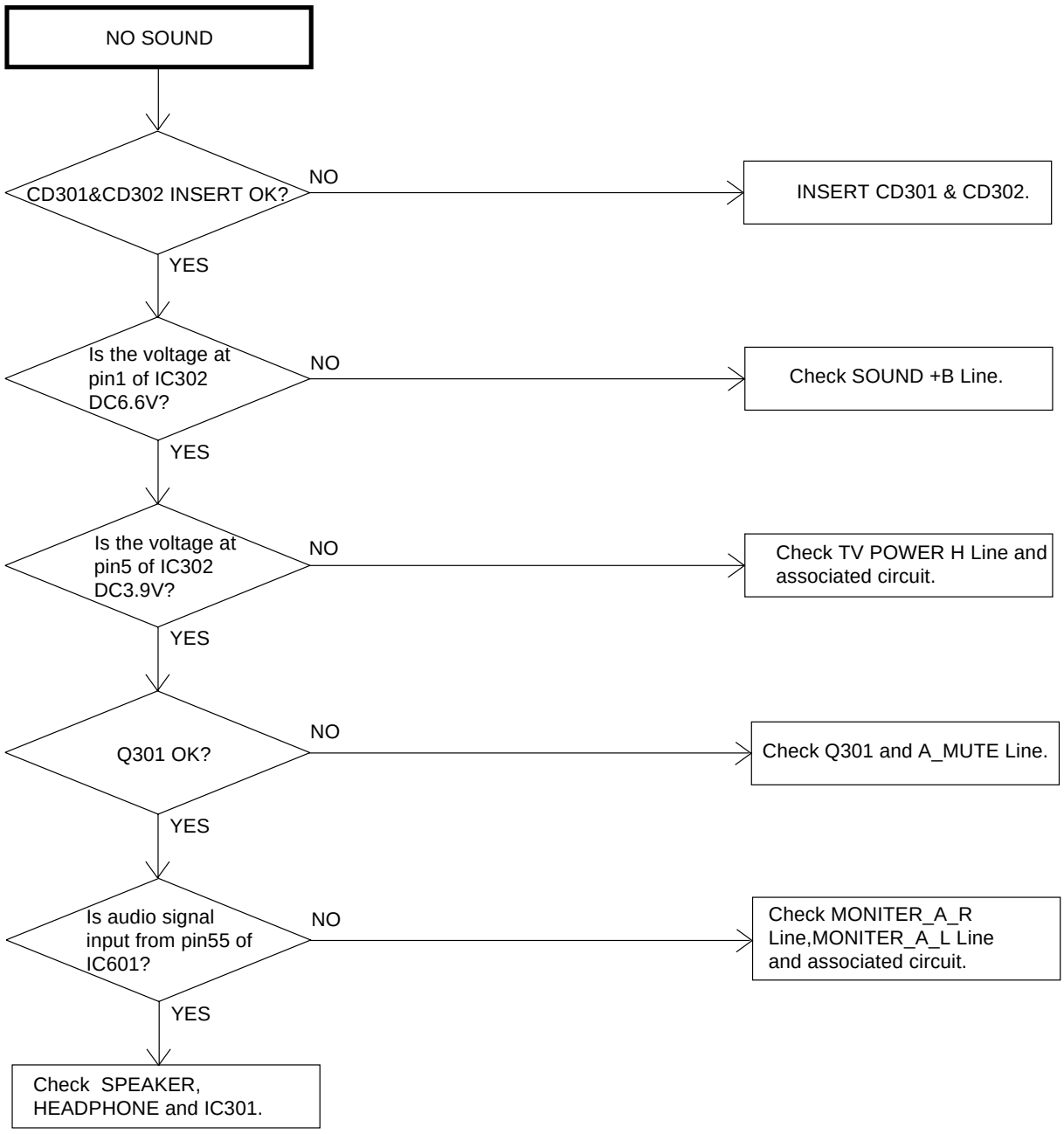
(TV SECTION)



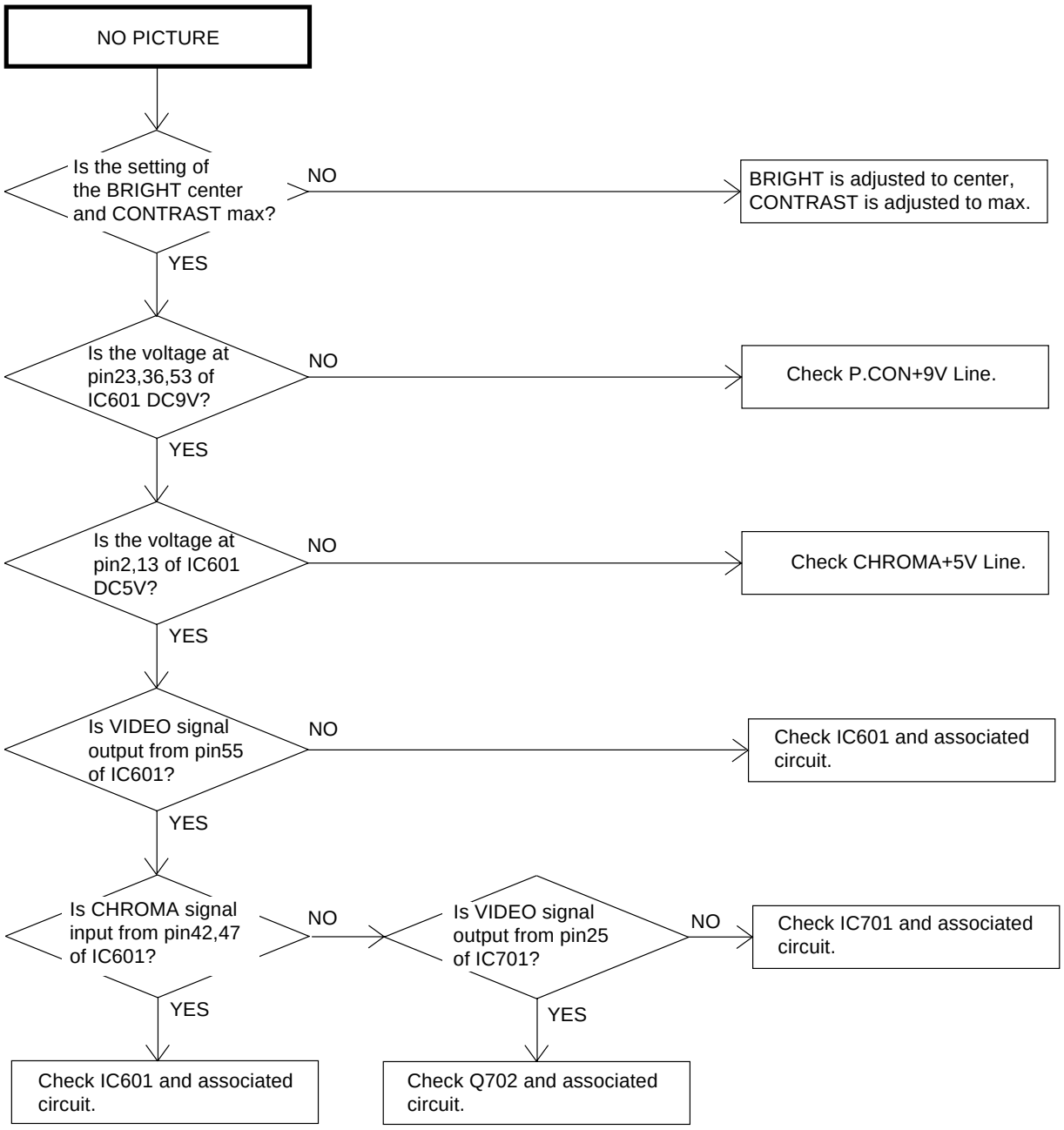
TROUBLESHOOTING GUIDE



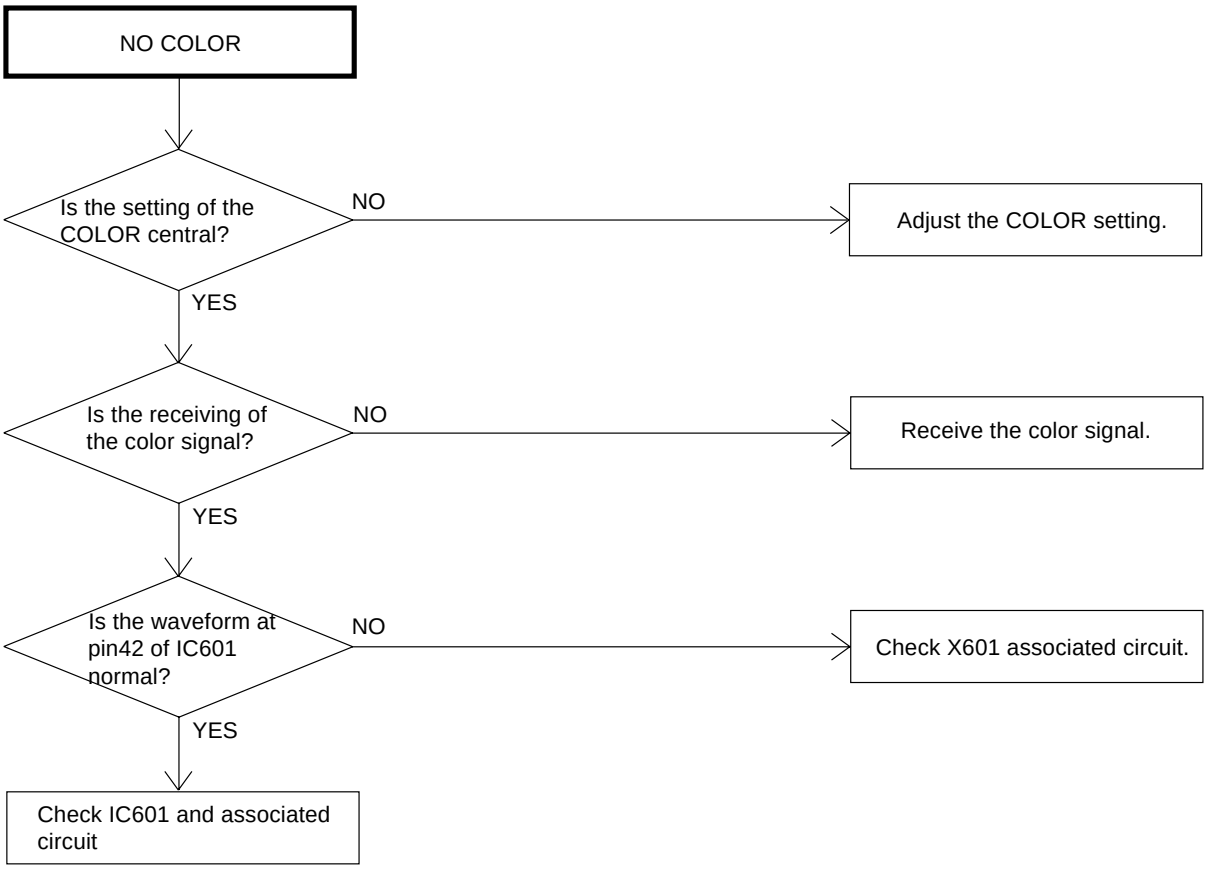
TROUBLESHOOTING GUIDE



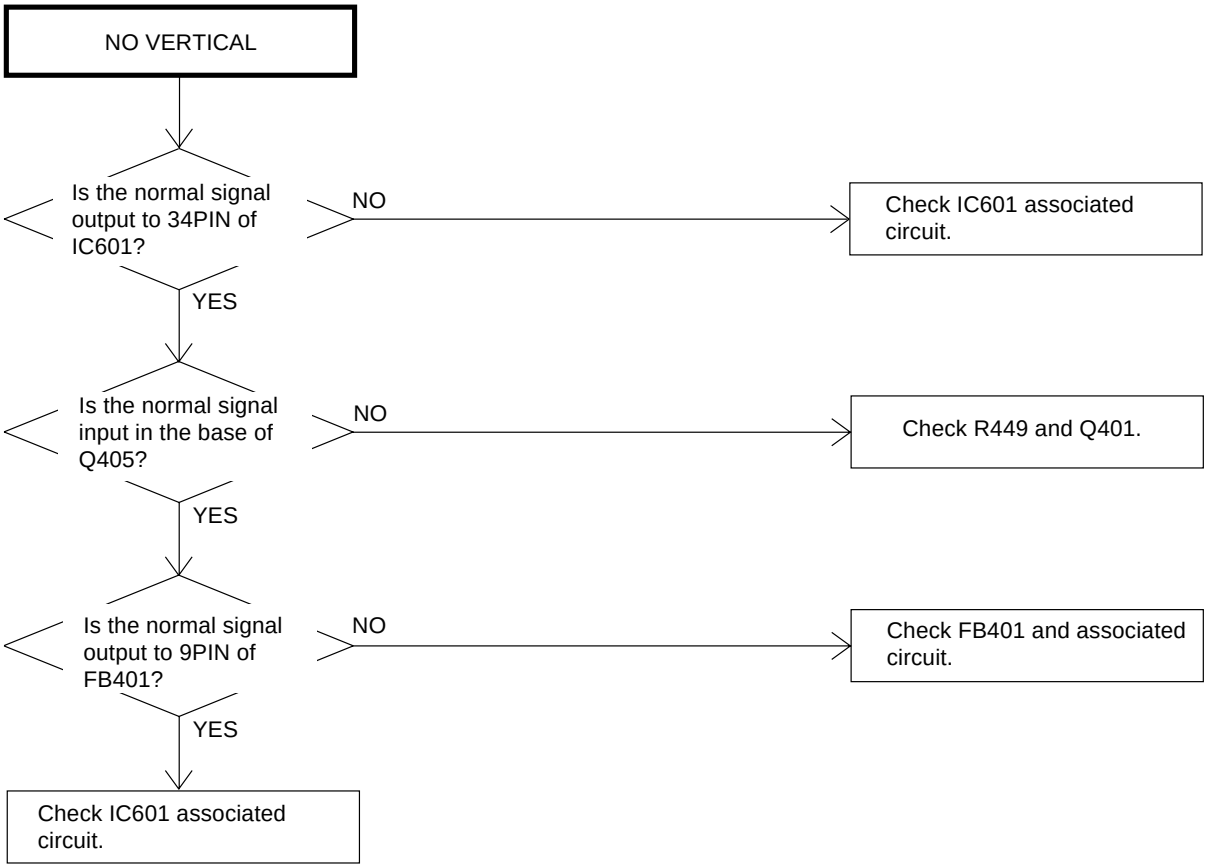
TROUBLESHOOTING GUIDE



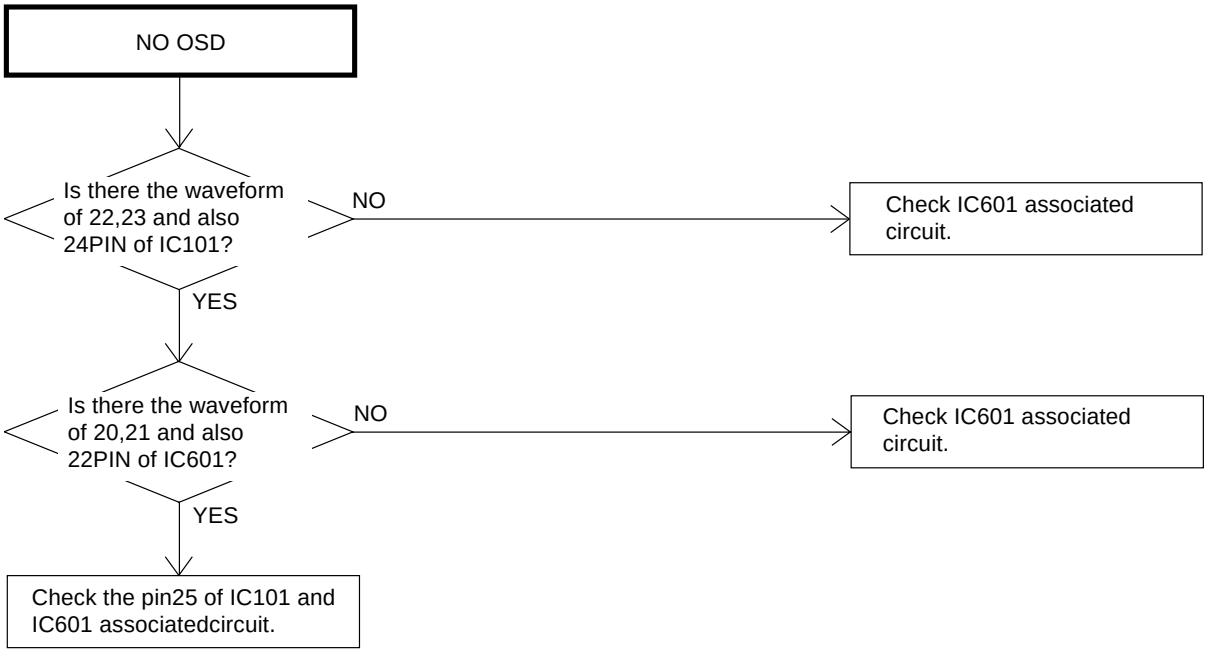
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE

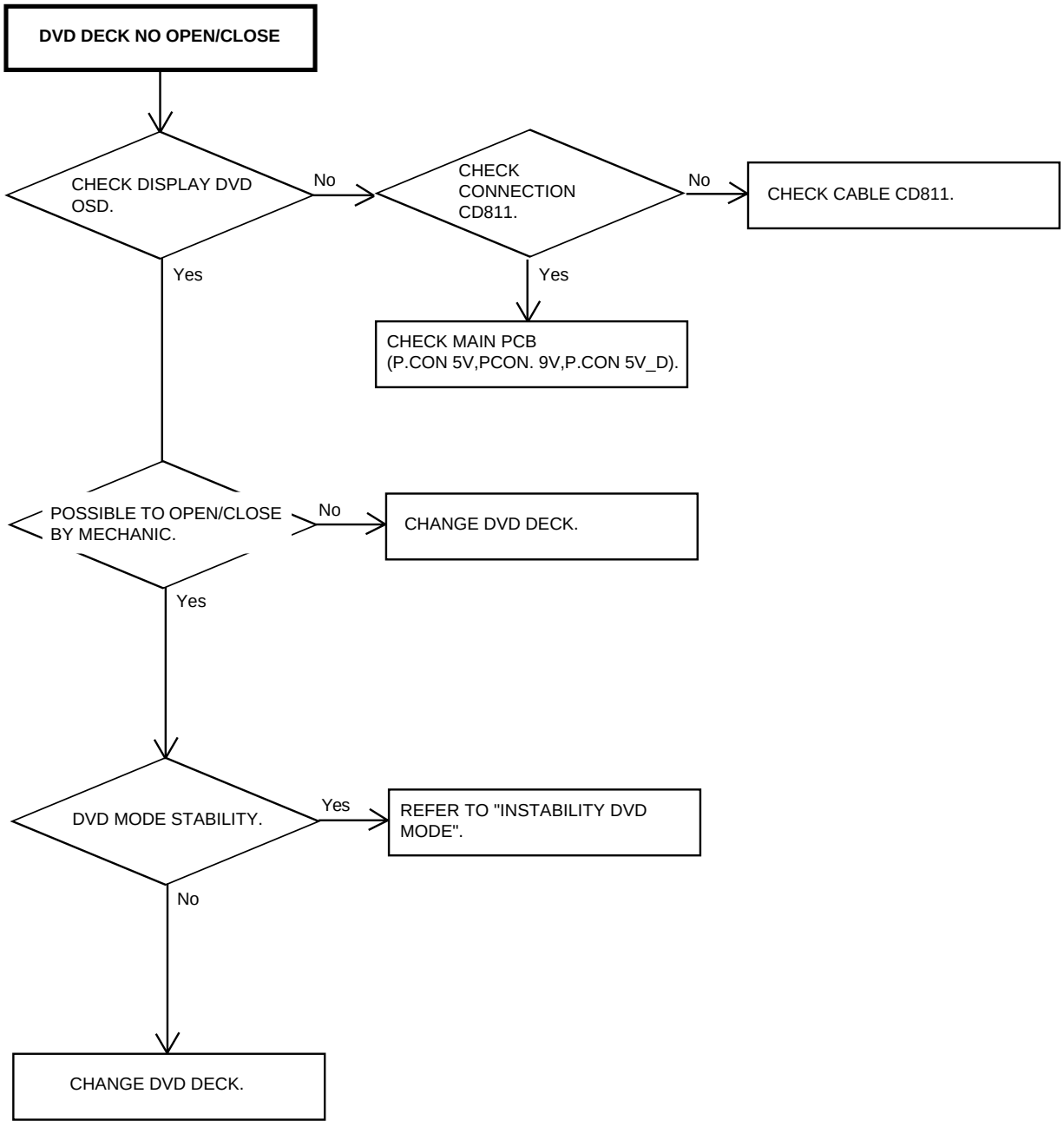


TROUBLESHOOTING GUIDE

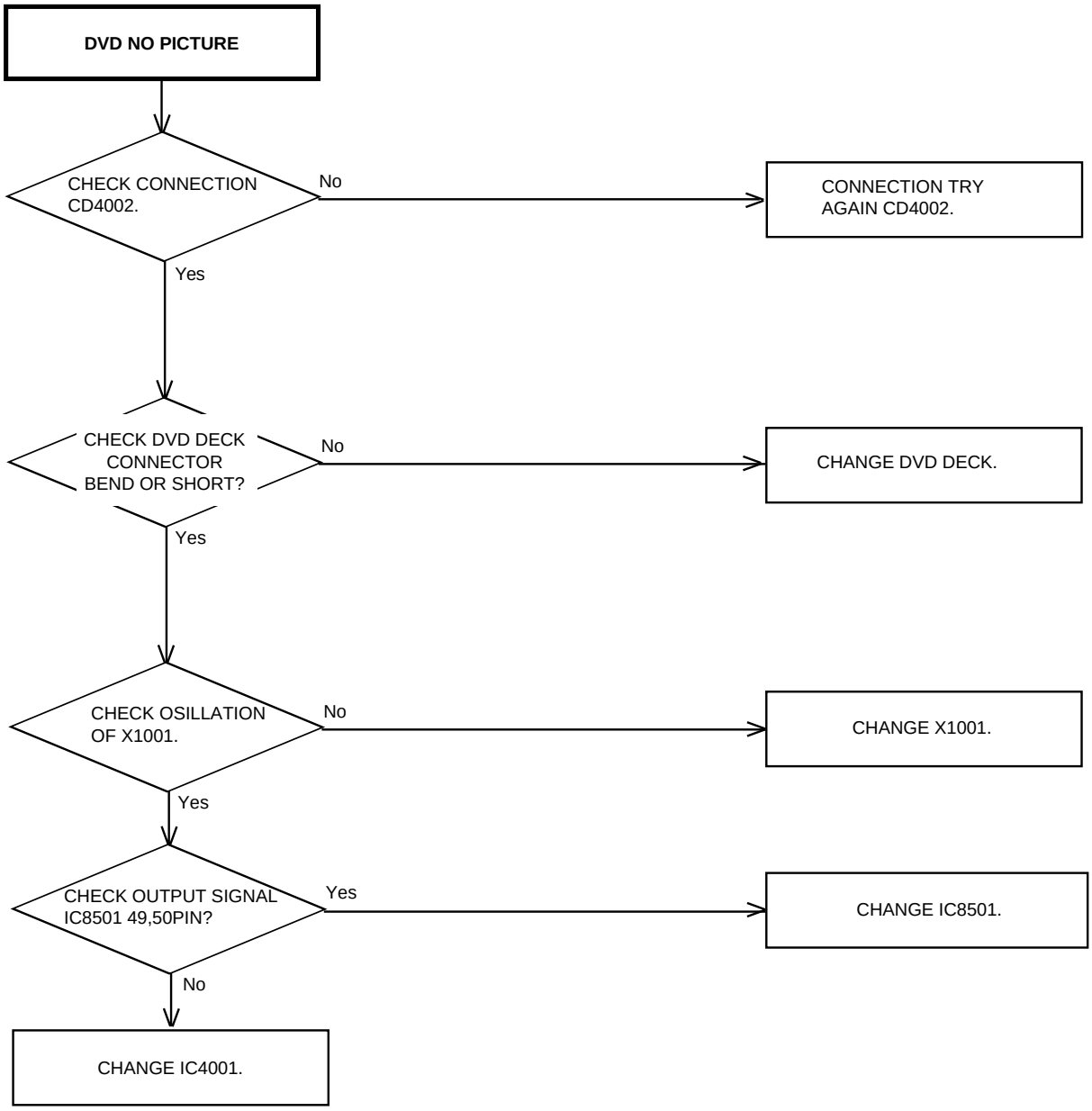

NO OSD
Is there the waveform of 22,23 and also 24PIN of IC101?
NO
Check IC601 associated circuit.
YES
Is there the waveform of 20,21 and also 22PIN of IC601?
NO
Check IC601 associated circuit.
YES
Check the pin25 of IC101 and IC601 associatedcircuit.

TROUBLESHOOTING GUIDE

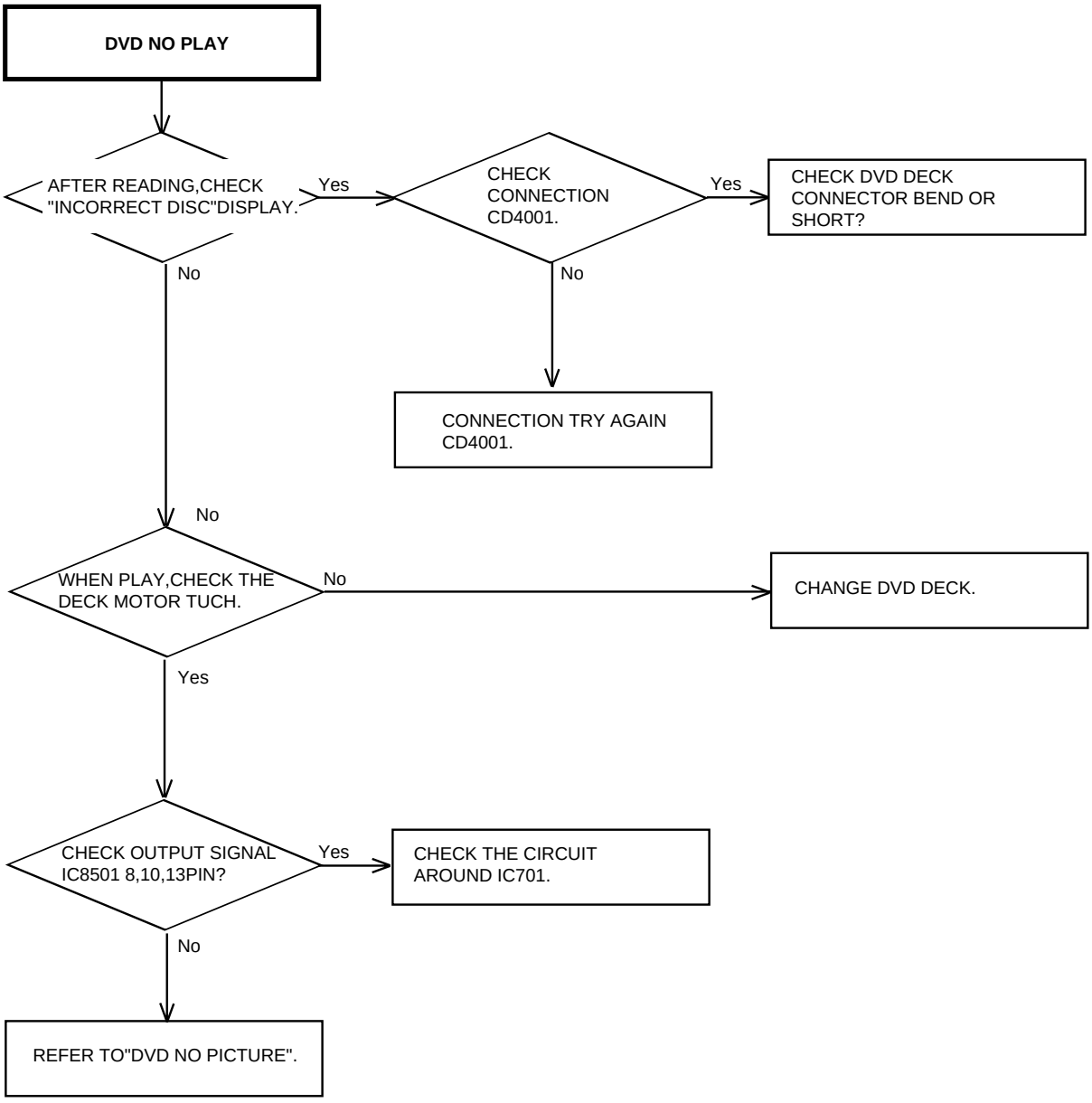
(DVD SECTION)



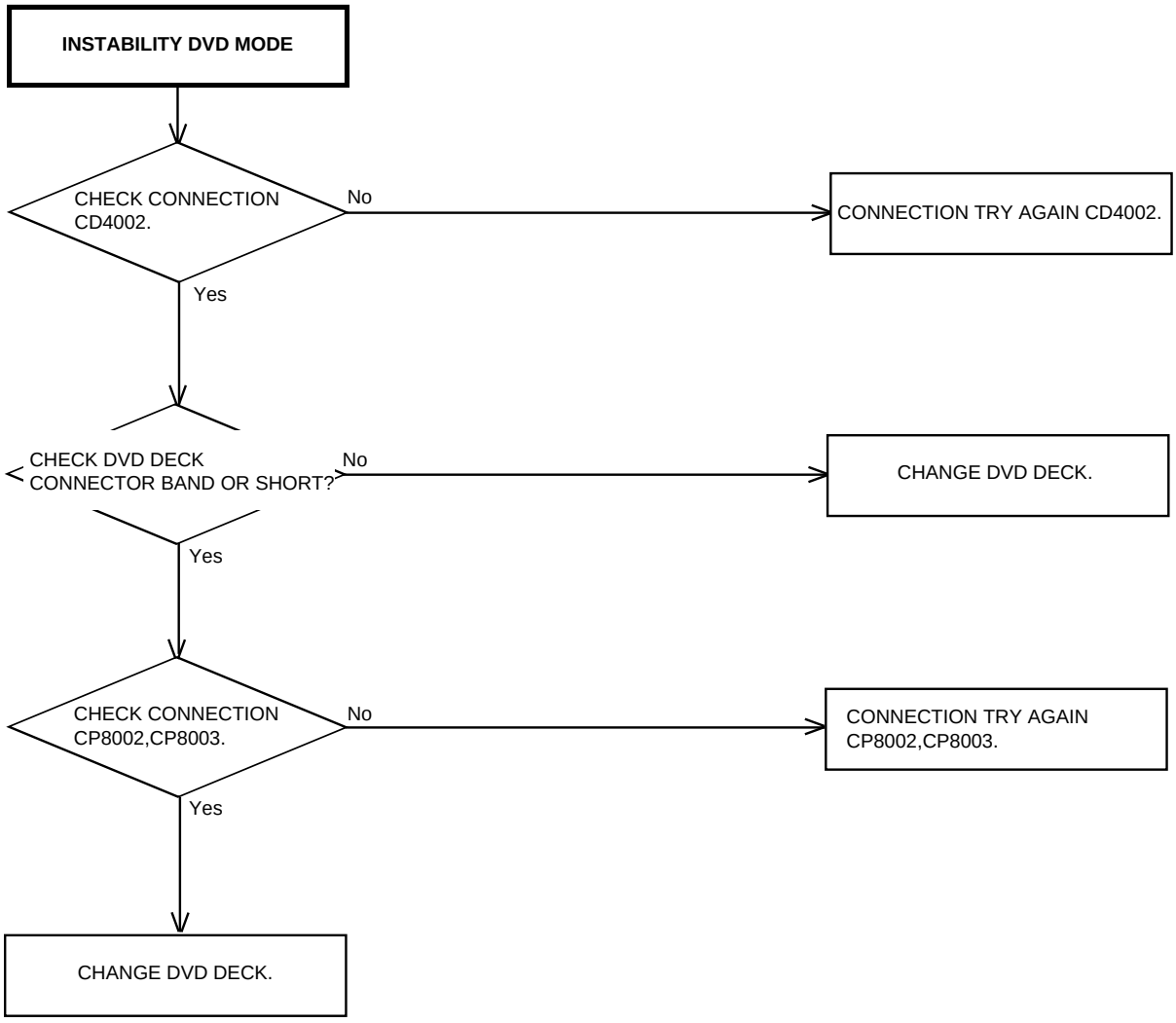
TROUBLESHOOTING GUIDE



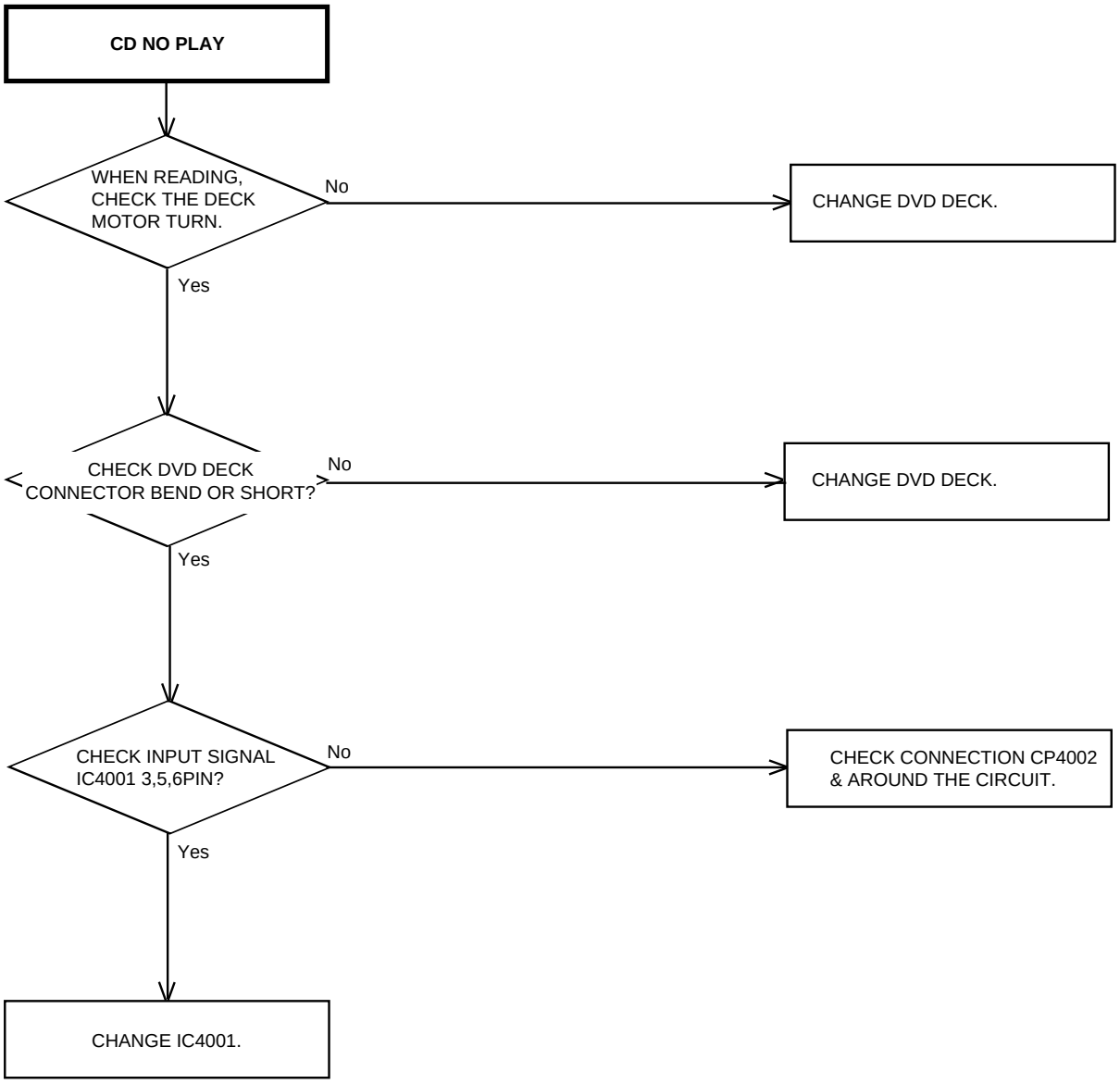
TROUBLESHOOTING GUIDE

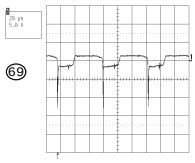


TROUBLESHOOTING GUIDE



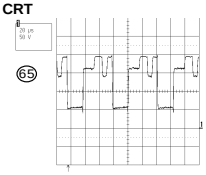
TROUBLESHOOTING GUIDE



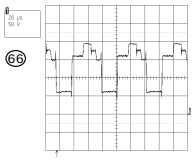


69

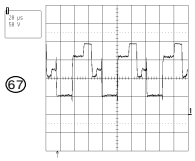
CRT



65



66



67

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

AV-20FD22 STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

2.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PC board :R1209→R209

3.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND.
Please, care must be taken for the following points.
(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, fo example, the chassis is pulled out.
(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

CONTENTS

SEMICONDUCTOR BASE CONNECTIONS ····· 2

BLOCK DIAGRAMS ····· 3

TV BLOCK DIAGRAM
DVD BLOCK DIAGRAM
POWER BLOCK DIAGRAM

CONNECTION DIAGRAM ····· 9

CIRCUIT DIAGRAMS ····· 11

SYSCON PCB MPEG SCHEMATIC DIAGRAM
SYSCON PCB SDRAM SCHEMATIC DIAGRAM
SYSCON PCB SYSCON SCHEMATIC DIAGRAM
SYSCON PCB VIDEO ENCODER SCHEMATIC DIAGRAM
AV PCB POWER SCHEMATIC DIAGRAM
AV PCB MICON/TUNER SCHEMATIC DIAGRAM
AV PCB VIF/SIF/CHROMA SCHEMATIC DIAGRAM
AV PCB SOUND AMP SCHEMATIC DIAGRAM
AV PCB I/O SCHEMATIC DIAGRAM
AV PCB AV SW SCHEMATIC DIAGRAM
AV PCB COMB FILTER SCHEMATIC DIAGRAM
AV PCB STEREO SCHEMATIC DIAGRAM
OPERATION PCB SCHEMATIC DIAGRAM
MAIN PCB TV POWER SCHEMATIC DIAGRAM
MAIN PCB DEFLECTION SCHEMATIC DIAGRAM
CRT PCB SCHEMATIC DIAGRAM

PATTERN DIAGRAMS ····· 43

SYSCON PCB PATTERN
AV PCB PATTERN
OPERATION PCB PATTERN
MAIN/CRT PCB PATTERN

WAVEFORMS ····· 53

AV-20FD22

SEMICONDUCTOR BASE CONNECTIONS

DIODE

1SS133T-77
AU02A-EIC
MTZJ10B T-77
MTZJ11B T-77
MTZJ27B T-77
MTZJ30B T-77
MTZJ5.1B T-77
MTZJ5.6B T-77
MTZJ6.8B T-77

11E1N-TA1B2
11ES1-EIC
SB040-G3

10ELS2N-TA1B2
10ELS6-TA2B5
1N4005-EIC
21DQ09N-TA2B1
RMPG06J-G3
RU2AM-EIC
SB140-EIC

1SS355 TE-17

SLR-342VCT32

FMV-3FULF027-102

GBL06L-6177

IC

OEC6063A
TB1253N
TC90A45P

MM1311AD

BT865AKRF
MD36710X
ZR36703

AN5829S
CD4053BNSR
HY57V161610DTC-8
LA7151M-TP-T1
M62420FP
PCM1716E
SN74LV4052APW

BR24C01AF-WE2

S-24C08ADPA-01

NJM4580M

PST600C

KIA7805API
KIA7809API

STR-G6624

AN7522

AN5522

TRANSISTOR

2SA1013 (TPE6)
2SA1624-AA
2SB1131(S,T)-AE
2SC2909(S,T)-AA
2SD1246(S,T)-AA
KTA1266-AT(Y,GR)
KTA1271_Y-AT

2SC1740SP TP
KRC111MAT
KRC114MAT
KTC3198-AT(Y,GR)

2SC4160-OEC-YAC1
2SD1667(R,S)

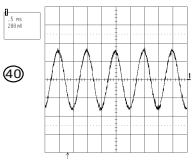
2SC2621(D,E)-RAC

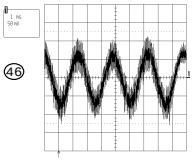
2SB1143(S,T,U)

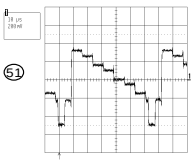
2SA1037AKT146R,S
2SC2412KT146 R,S
2SC2412KT147(R,S)
2SC2814(F3,F4)-T
DTA114EKAT146
DTA143EKAT146
DTC144EKAT146
KRC103RTK
KRC111RTK

2SD2499(LBOEC1)

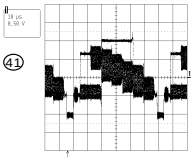
STEREO

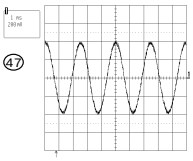


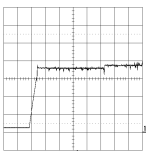




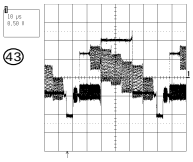
TV POWER

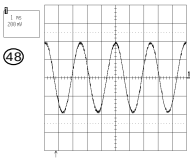


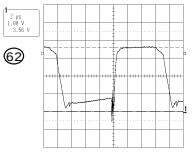




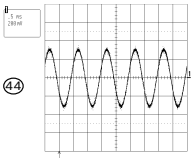
AV SW

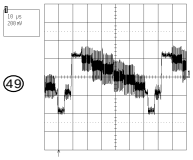


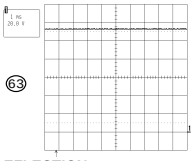




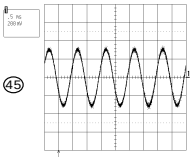
COMB FILTER

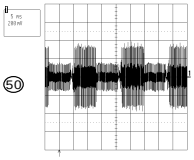


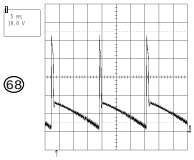




DEFLECTION



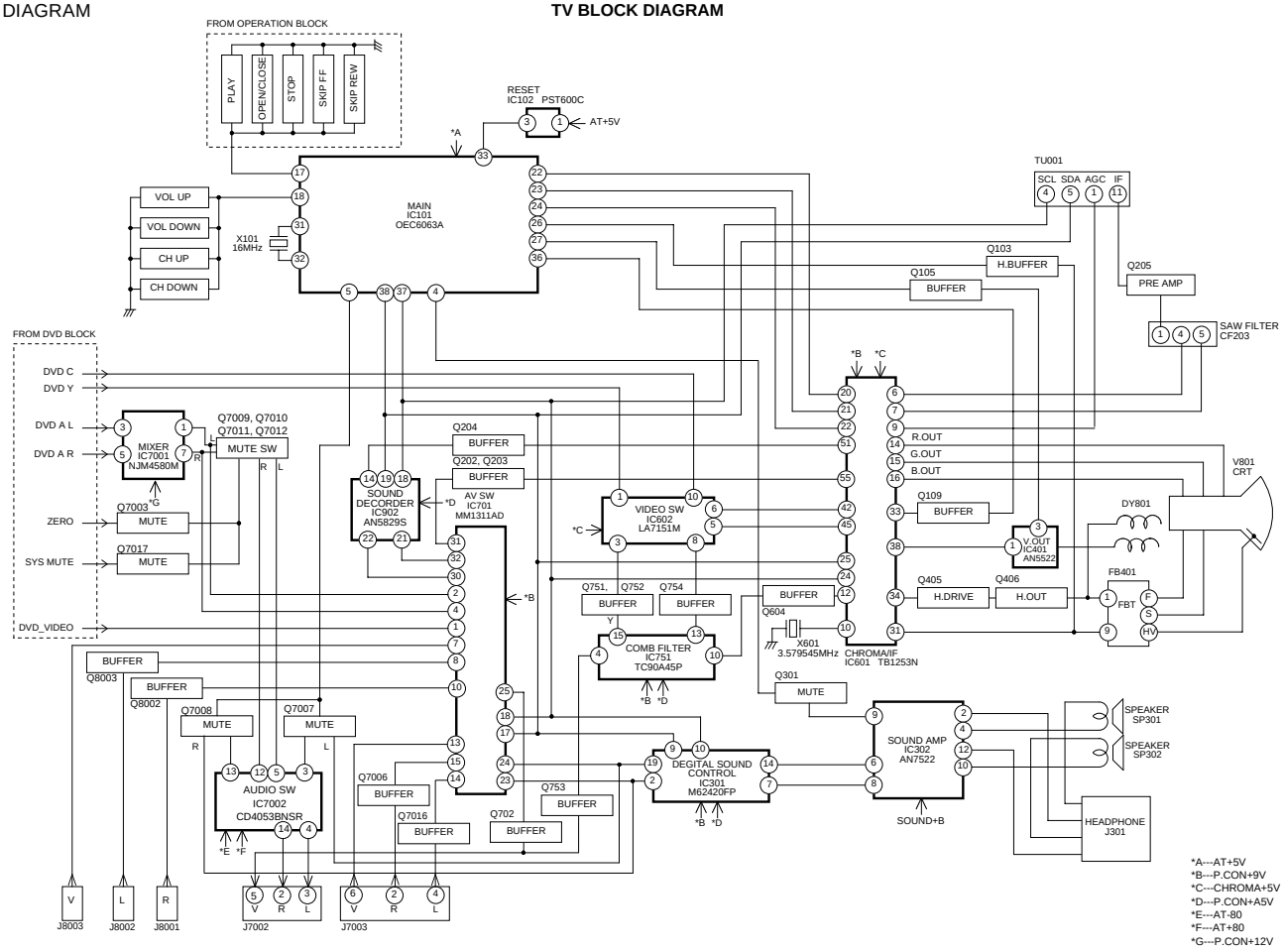




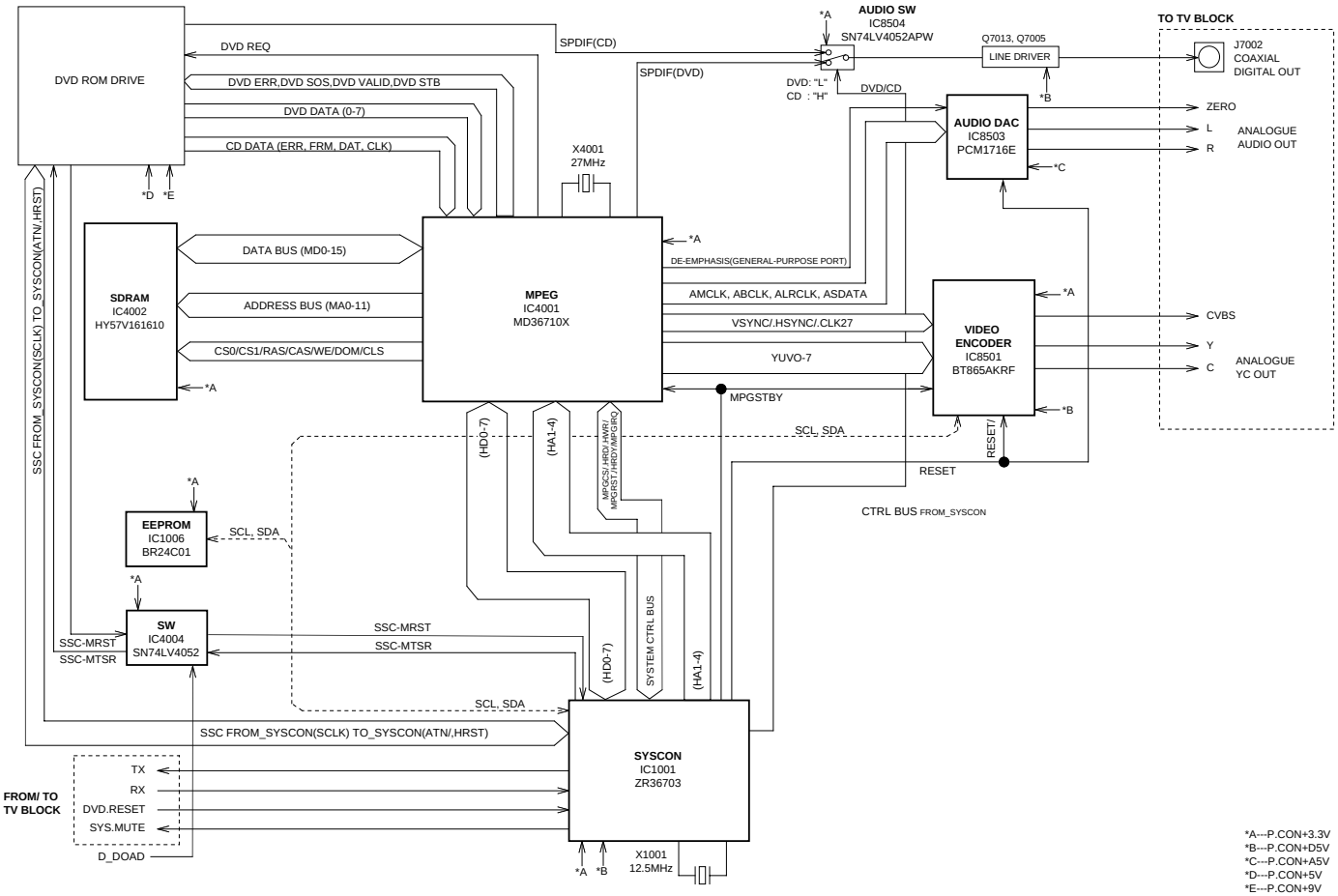
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

BLOCK DIAGRAM

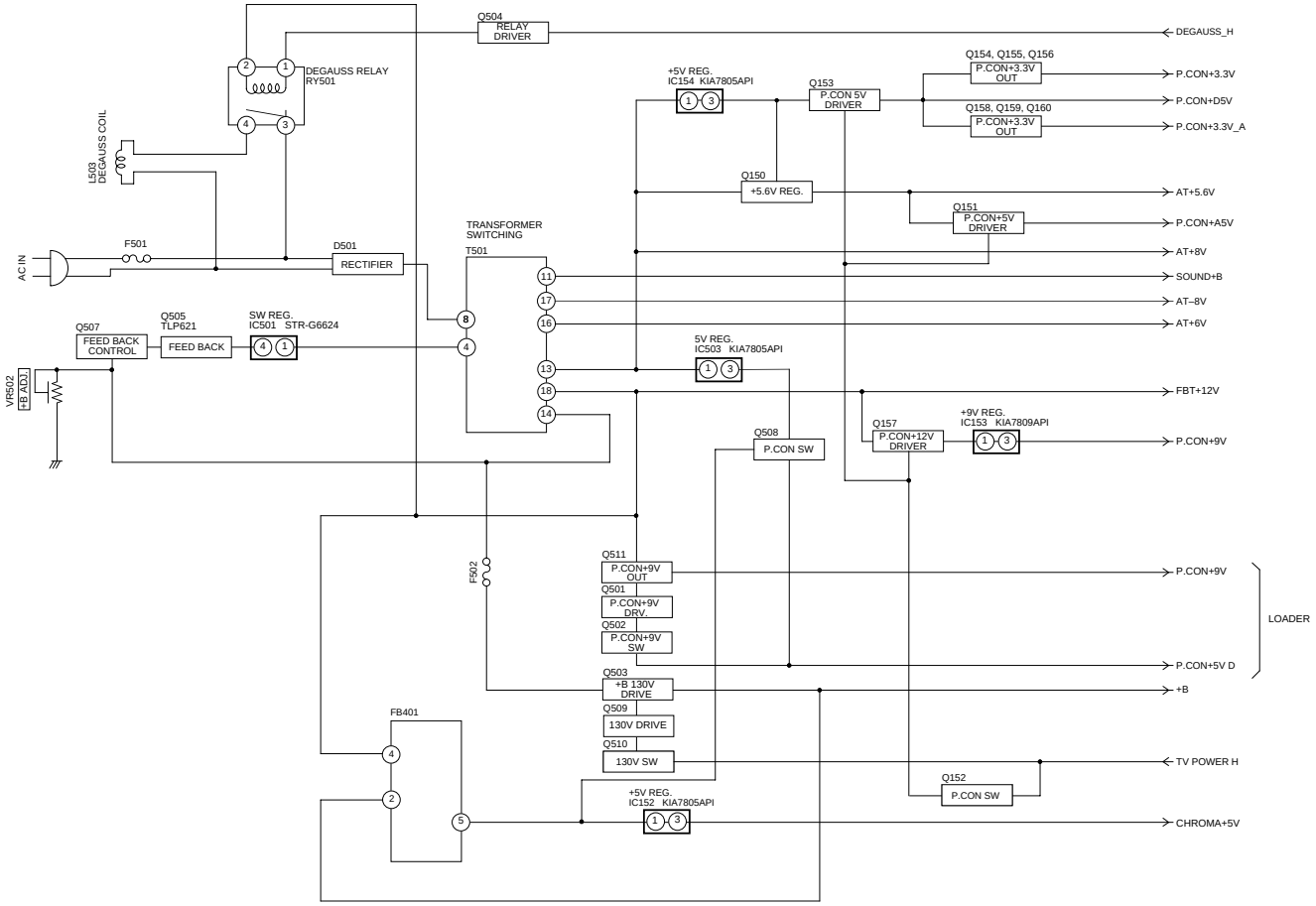
TV BLOCK DIAGRAM



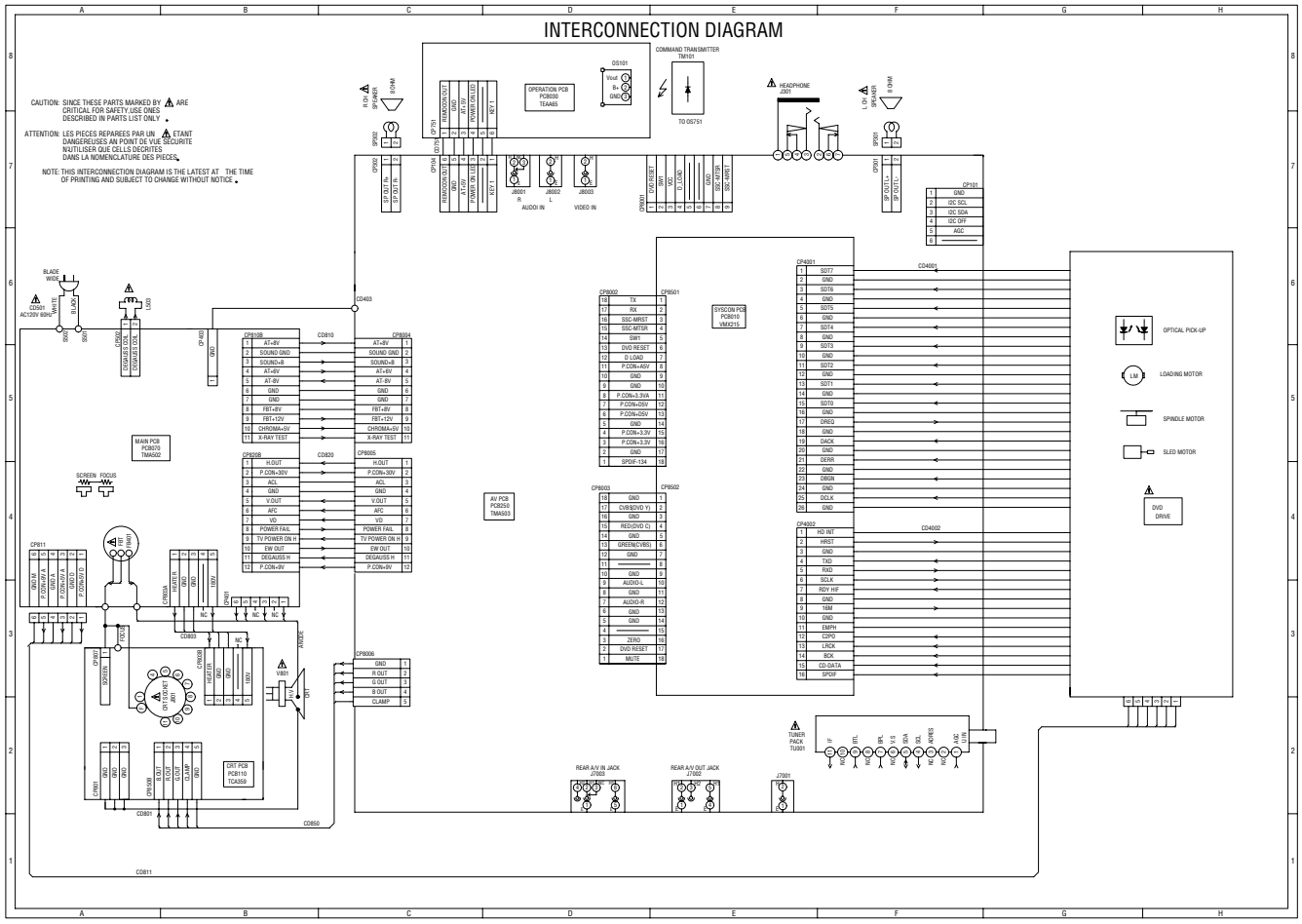
DVD BLOCK DIAGRAM



POWER BLOCK DIAGRAM

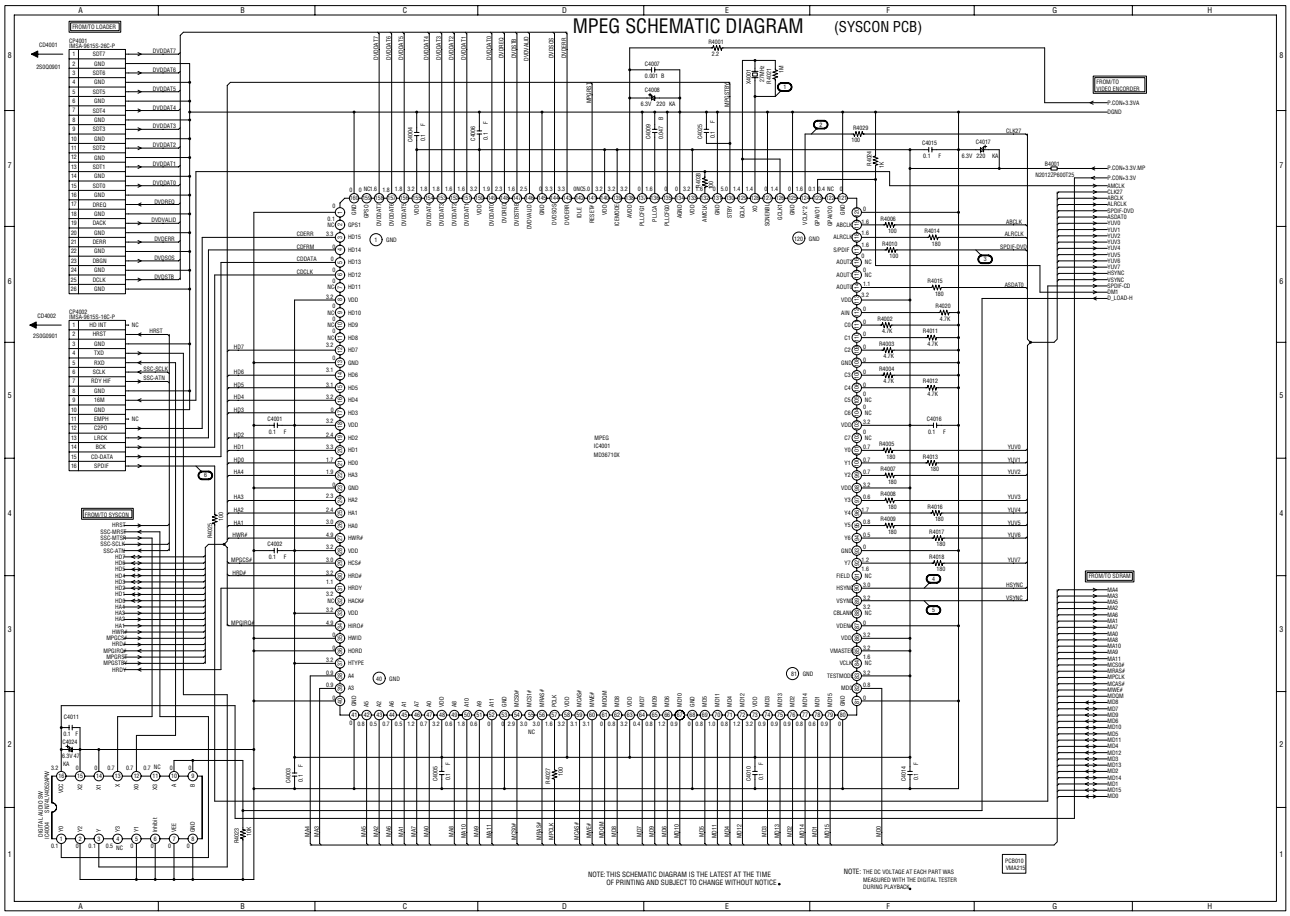


WIRING CONNECTION DIAGRAM

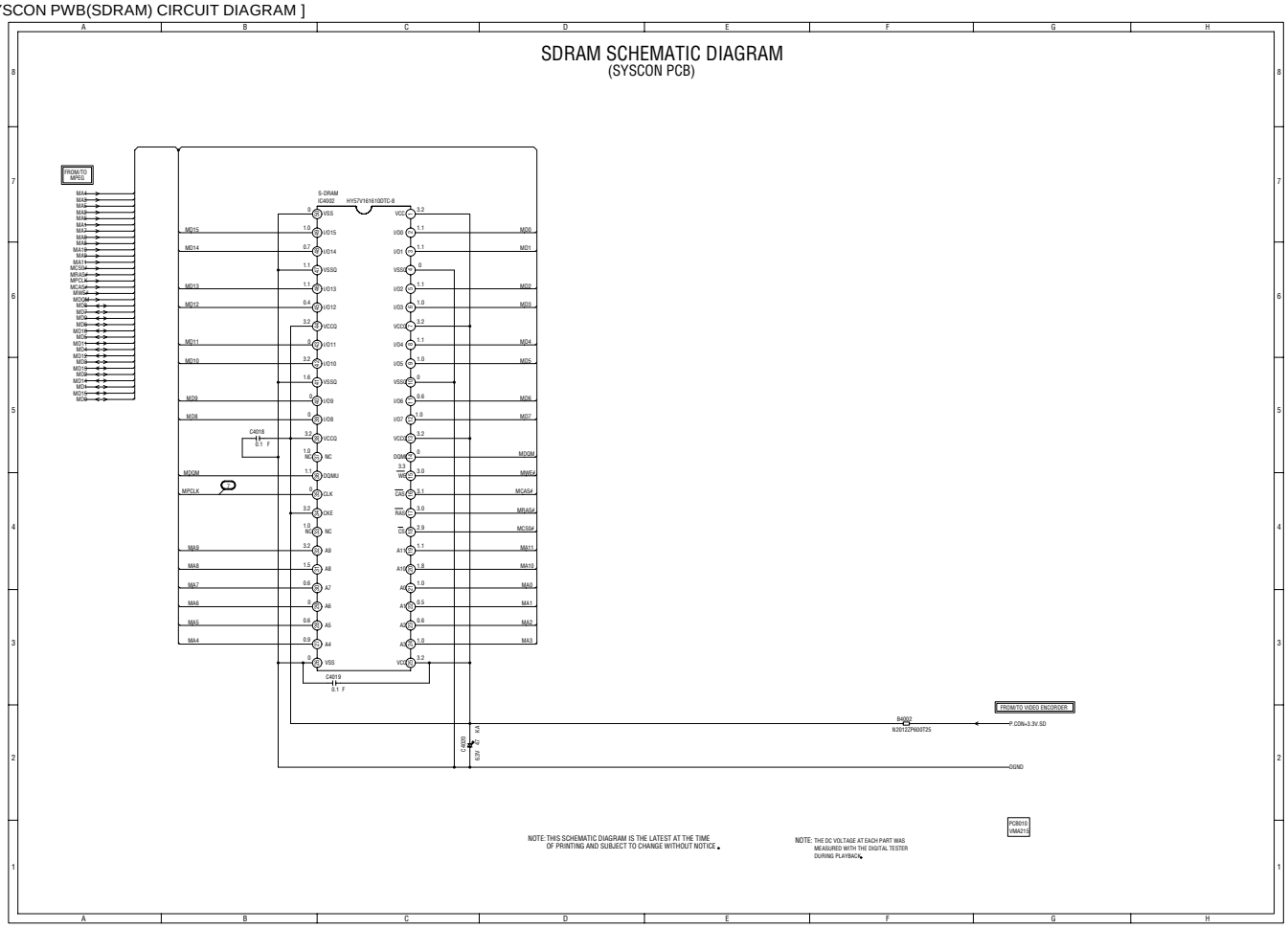

INTERCONNECTION DIAGRAM
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE NUITILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .
OPERATION PCB PCB030 TEA465
COMMAND TRANSMITTER TM101
TO DS751
HEADPHONE J301
OPTICAL PICK-UP
LOADING MOTOR
SPINDLE MOTOR
SLED MOTOR
DVD DRIVE
MAIN PCB PCB070 TMA502
AV PCB PCB053 TMA503
SYSCON PCB PCB019 VMX215
CRT PCB PCB110 TCA359
TUNER PACK TU001
REAR A/V IN JACK J7003
REAR A/V OUT JACK J7002
J7001
AUDIO IN
VIDEO IN

Circuit Diagram

[SYSCON PWB(MPEG) CIRCUIT DIAGRAM]


MPEG SCHEMATIC DIAGRAM (SYSCON PCB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

[SYSCON PWB(SDRAM) CIRCUIT DIAGRAM]



[SYSCON PWB(SYSCON) CIRCUIT DIAGRAM]

SYSCON SCHEMATIC DIAGRAM

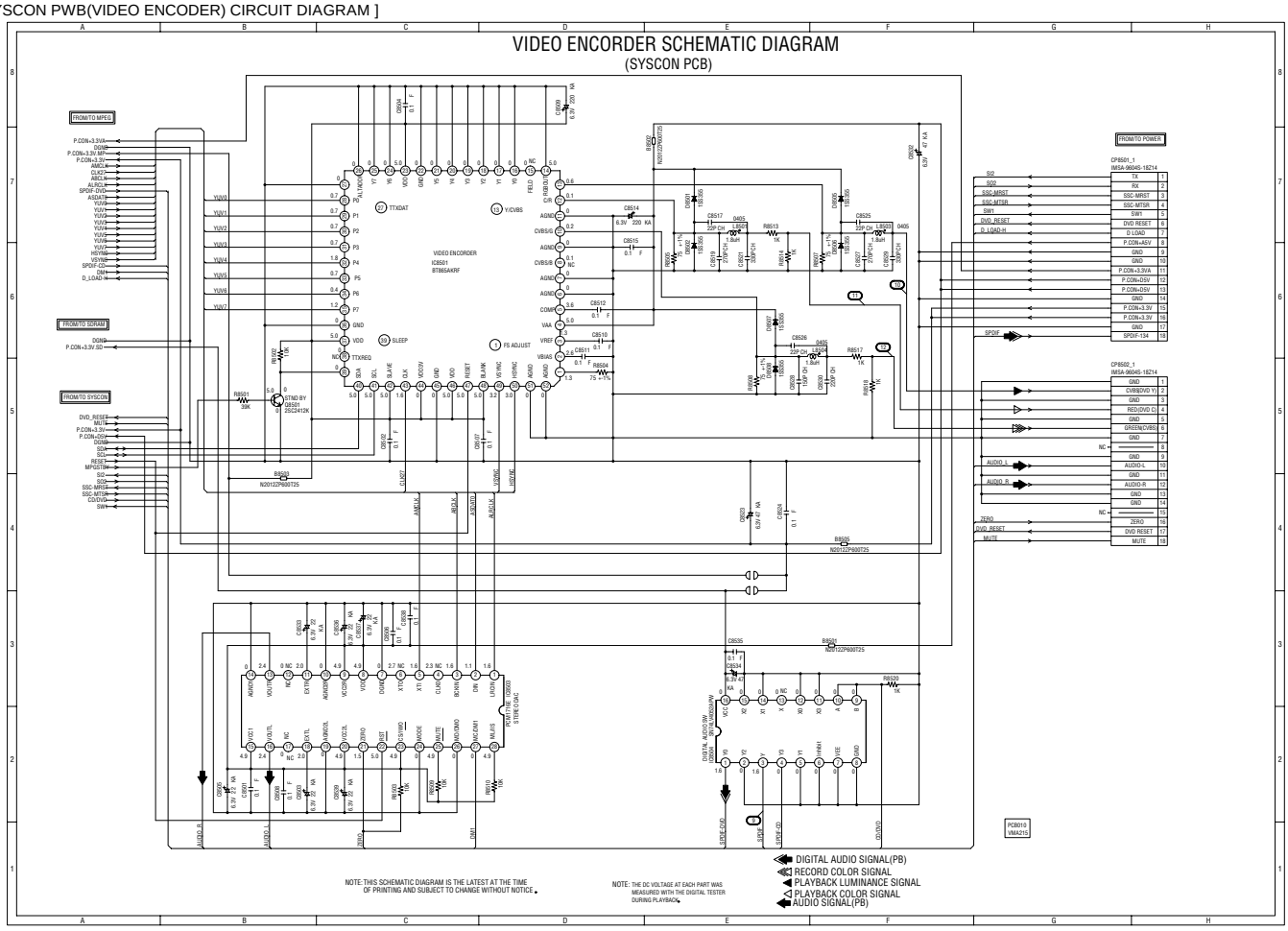
(SYSCON PCB)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

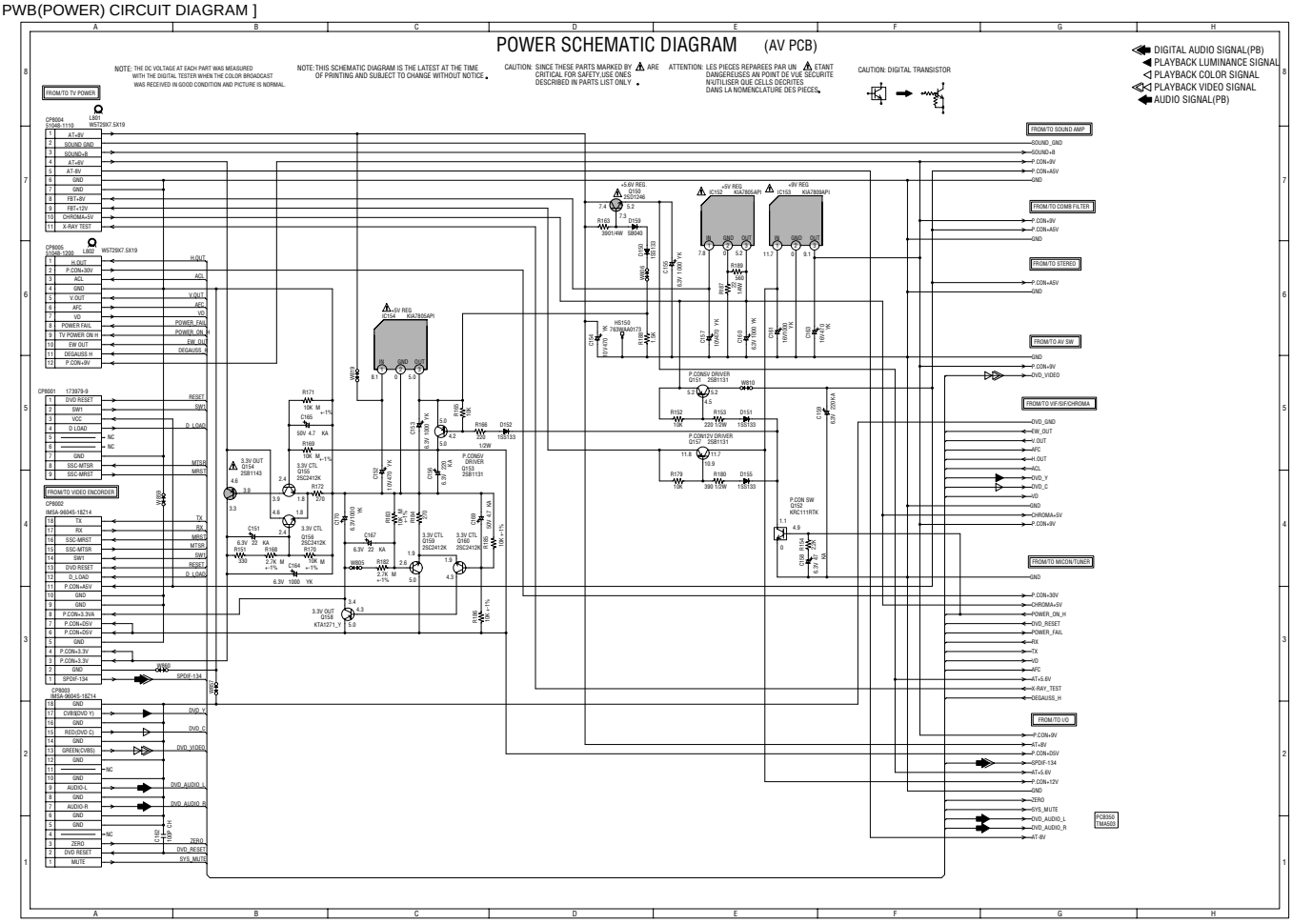
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
VMA215

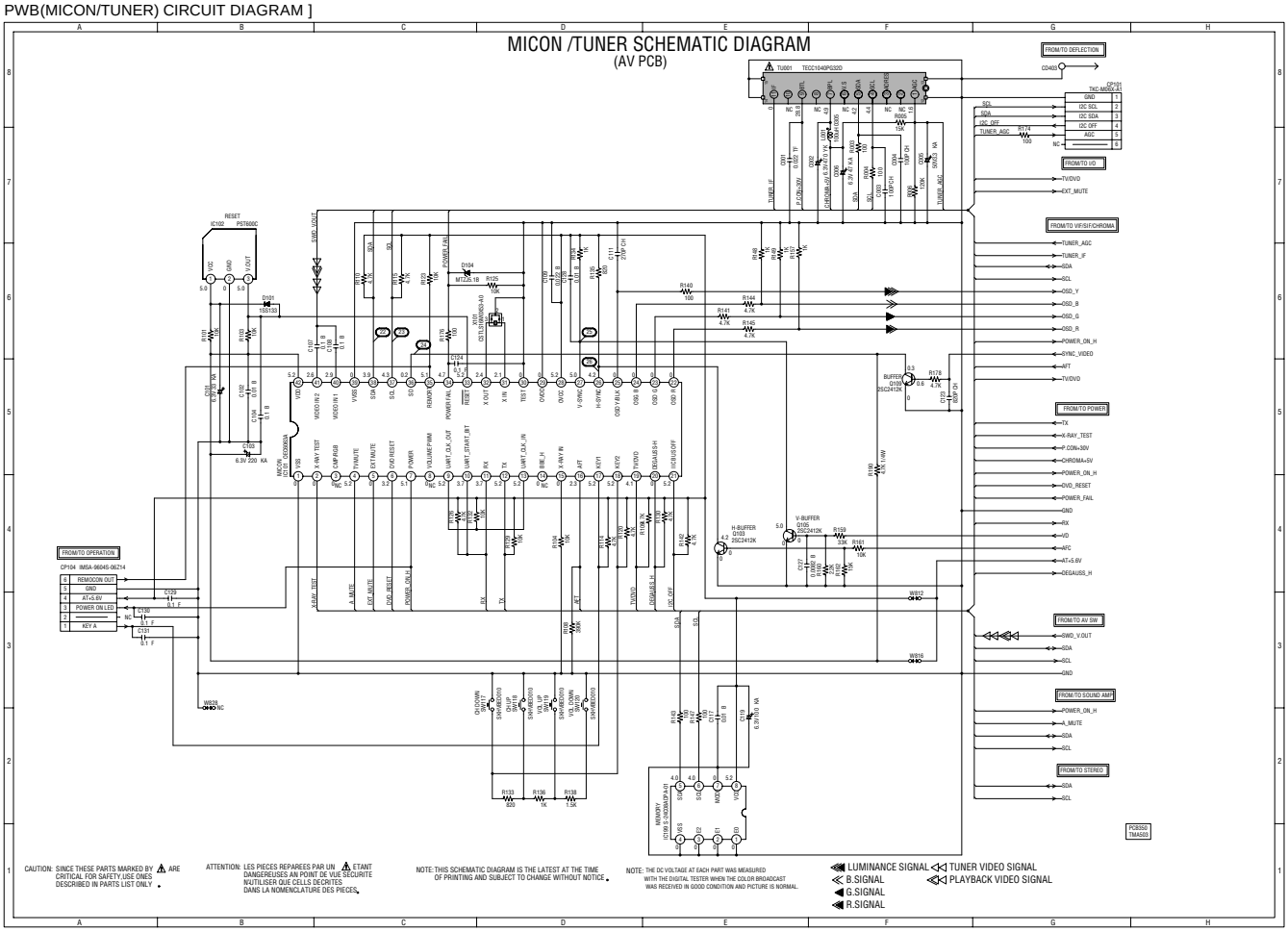
[SYSCON PWB(VIDEO ENCODER) CIRCUIT DIAGRAM]


VIDEO ENCORDER SCHEMATIC DIAGRAM
(SYSCON PCB)
FROM/TO MPEG
FROM/TO SDRAM
FROM/TO SYSCON
FROM/TO POWER
VIDEO ENCODER
ICB501
BT866AKRF
DIGITAL AUDIO SIGNAL(PB)
RECORD COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
AUDIO SIGNAL(PB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

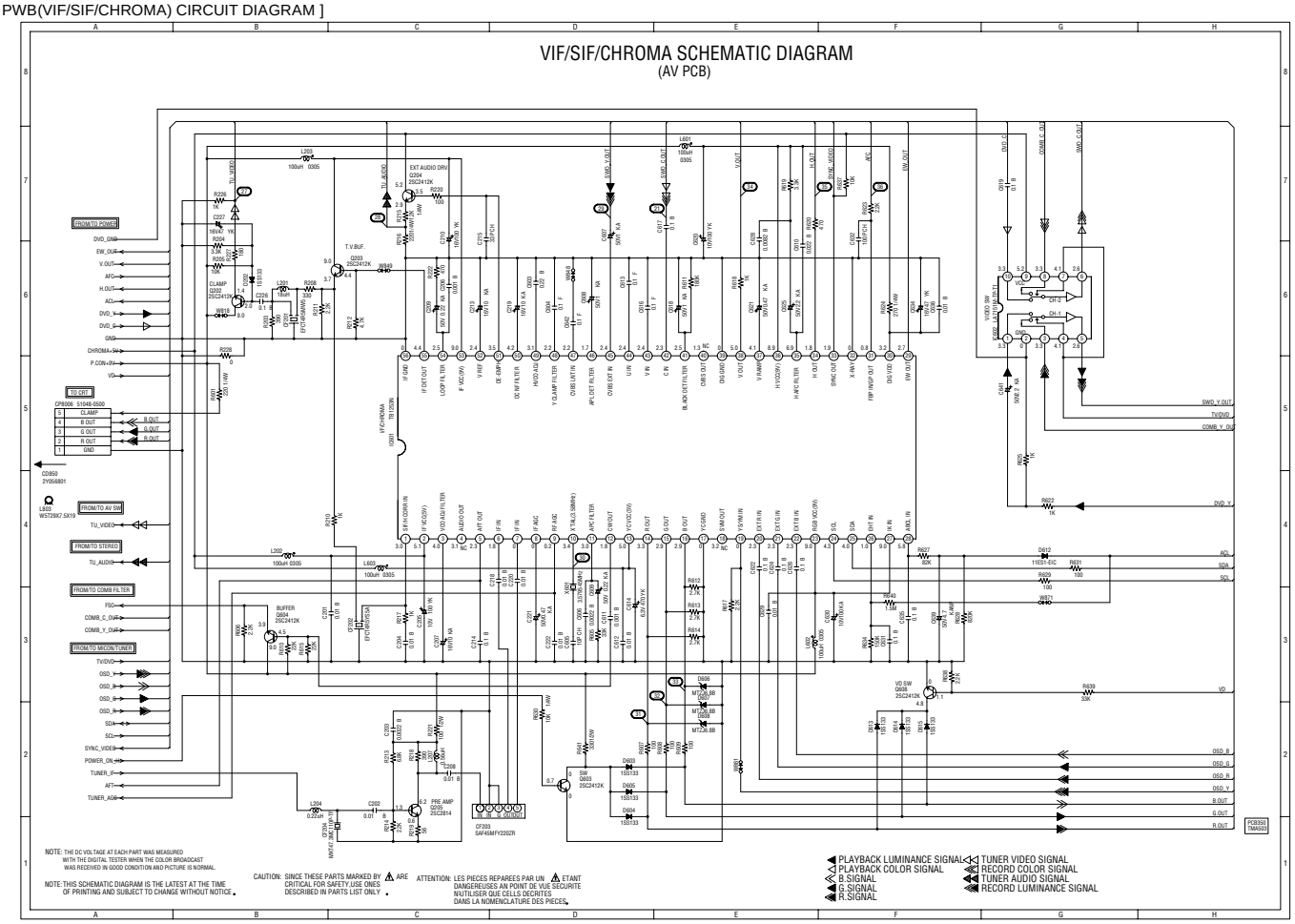
[AV PWB(POWER) CIRCUIT DIAGRAM]


POWER SCHEMATIC DIAGRAM (AV PCB)
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: DIGITAL TRANSISTOR
DIGITAL AUDIO SIGNAL(PB)
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK VIDEO SIGNAL
AUDIO SIGNAL(PB)
FROM/TO TV POWER
FROM/TO VIDEO ENCORDER
FROM/TO SOUND AMP
FROM/TO COMB FILTER
FROM/TO STEREO
FROM/TO AV SW
FROM/TO VIF/SIF/CHROMA
FROM/TO MICOM/TUNER
FROM/TO I/O
+5V REG. KIA7805API
+9V REG. KIA7809API
P.CON3V DRIVER
P.CON SW
PCB35S TIM4S05

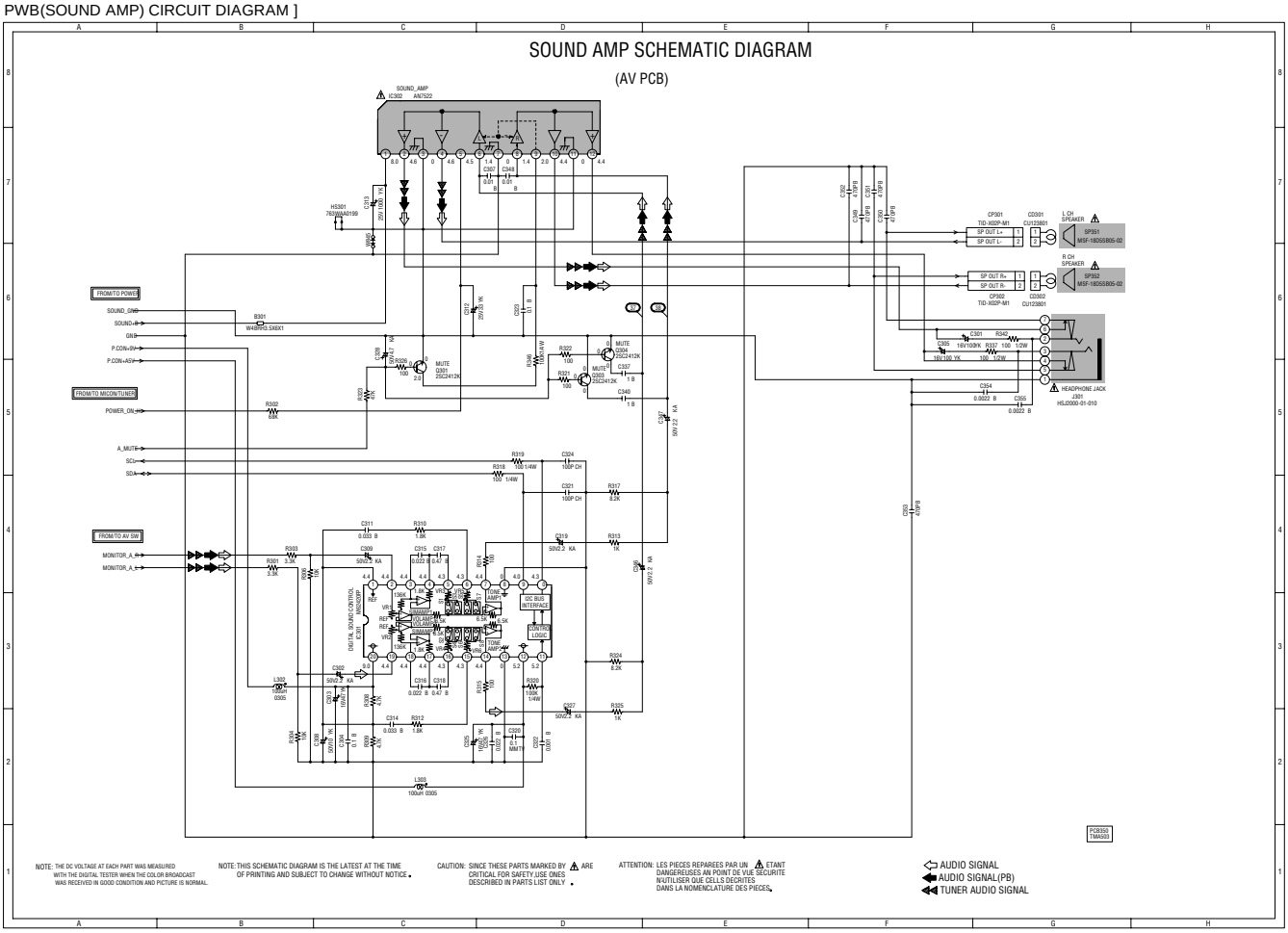
[AV PWB(MICON/TUNER) CIRCUIT DIAGRAM]



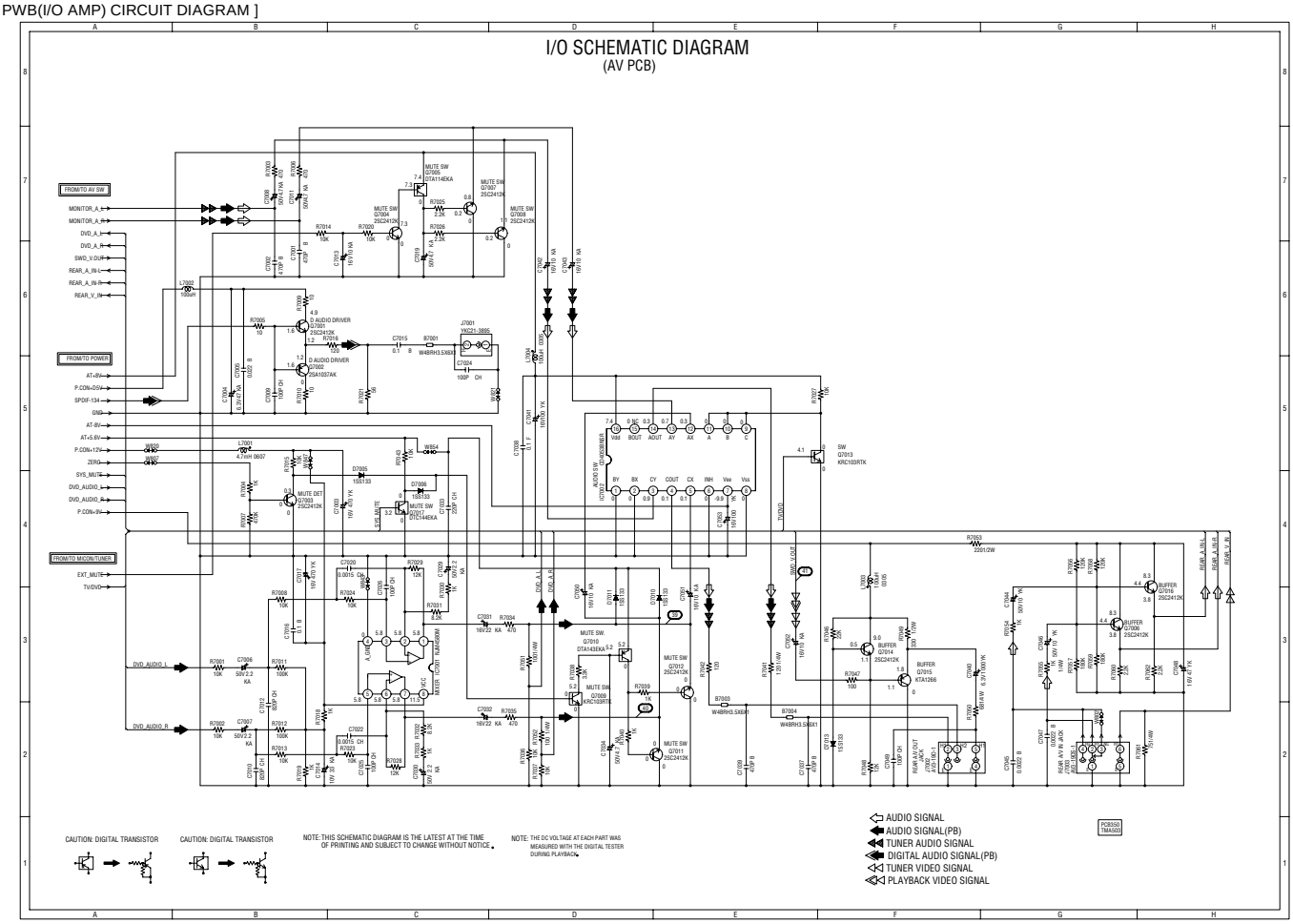
[AV PWB(VIF/SIF/CHROMA) CIRCUIT DIAGRAM]


VIF/SIF/CHROMA SCHEMATIC DIAGRAM
(AV PCB)
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
B.SIGNAL
G.SIGNAL
R.SIGNAL
TUNER VIDEO SIGNAL
RECORD COLOR SIGNAL
TUNER AUDIO SIGNAL
RECORD LUMINANCE SIGNAL
PCB352
TAA320

[AV PWB(SOUND AMP) CIRCUIT DIAGRAM]


SOUND AMP SCHEMATIC DIAGRAM
(AV PCB)
SOUND_AMP
IC302 AN7522
FROM/TO POWER
FROM/TO MICON/TUNER
FROM/TO AV SW
DIGITAL SOUND CONTROL PROCESSOR IC301
I2C BUS INTERFACE
CONTROL LOGIC
TONE AMP
VOLUME AMP
SP901
SP902
SP351
SP352
J301
HEADPHONE JACK
L CH SPEAKER
R CH SPEAKER
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
AUDIO SIGNAL
AUDIO SIGNAL(PB)
TUNER AUDIO SIGNAL

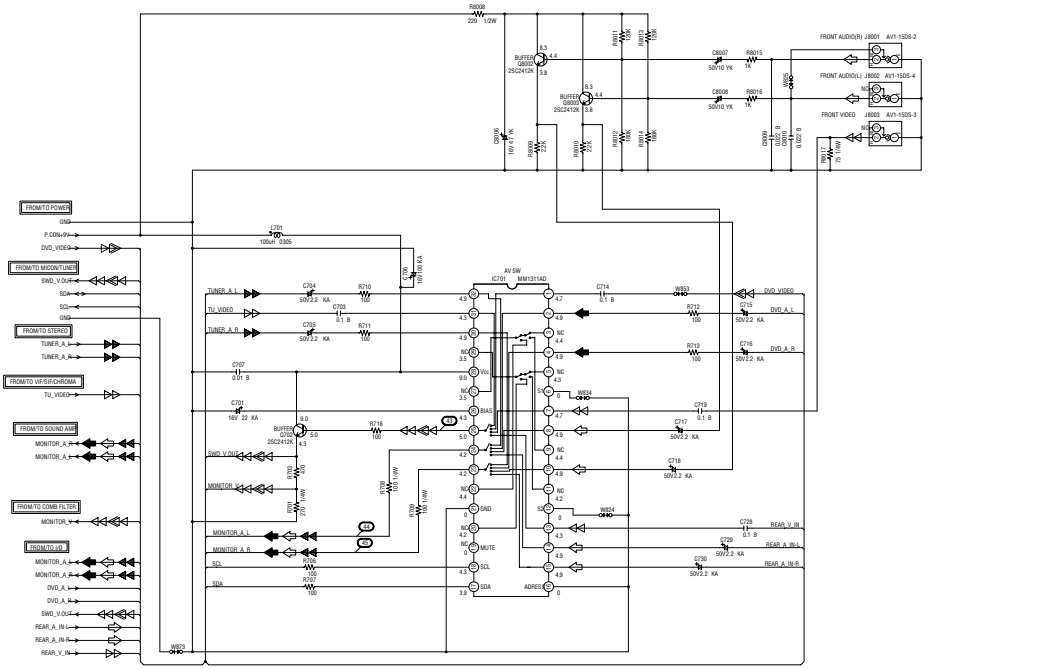
[AV PWB(I/O AMP) CIRCUIT DIAGRAM]



[AV PWB(AV SW) CIRCUIT DIAGRAM]

AV SW SCHEMATIC DIAGRAM

(AV PCB)

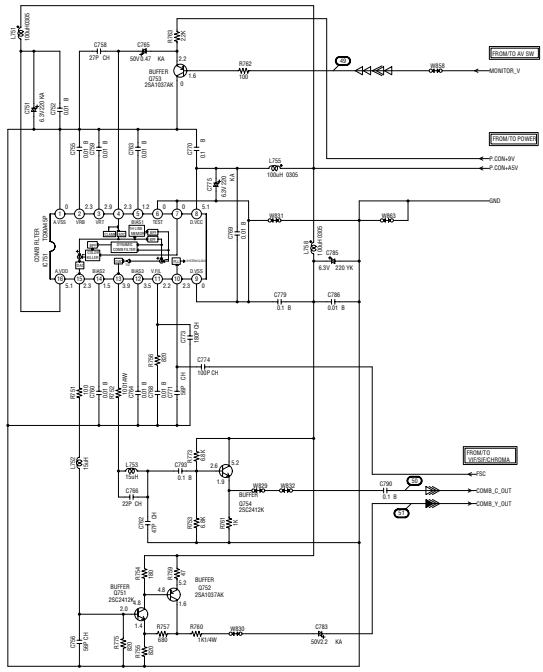


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

[AV PWB(COMB FILTER) CIRCUIT DIAGRAM]

COMB FILTER SCHEMATIC DIAGRAM
(AV PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

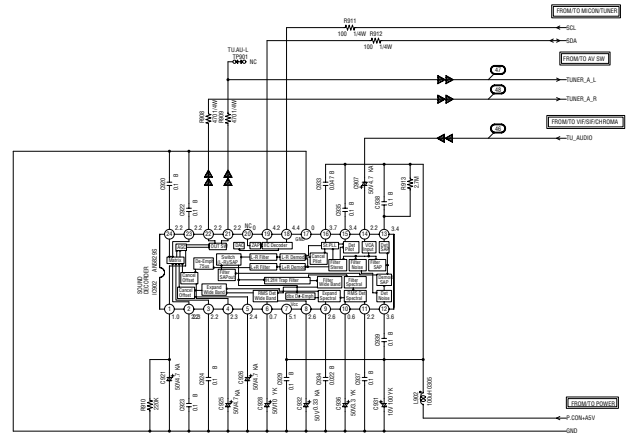
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
TUNER VIDEO SIGNAL
PLAYBACK VIDEO SIGNAL

[AV PWB(STEREO) CIRCUIT DIAGRAM]

STEREO SCHEMATIC DIAGRAM

(AV PCB)



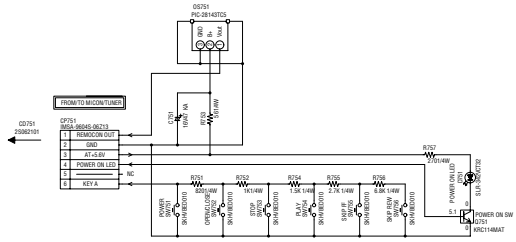
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

◀◀ TUNER AUDIO SIGNAL

[OPERATON PWB CIRCUIT DIAGRAM]

OPERATION SCHEMATIC DIAGRAM
(OPERATION PCB)



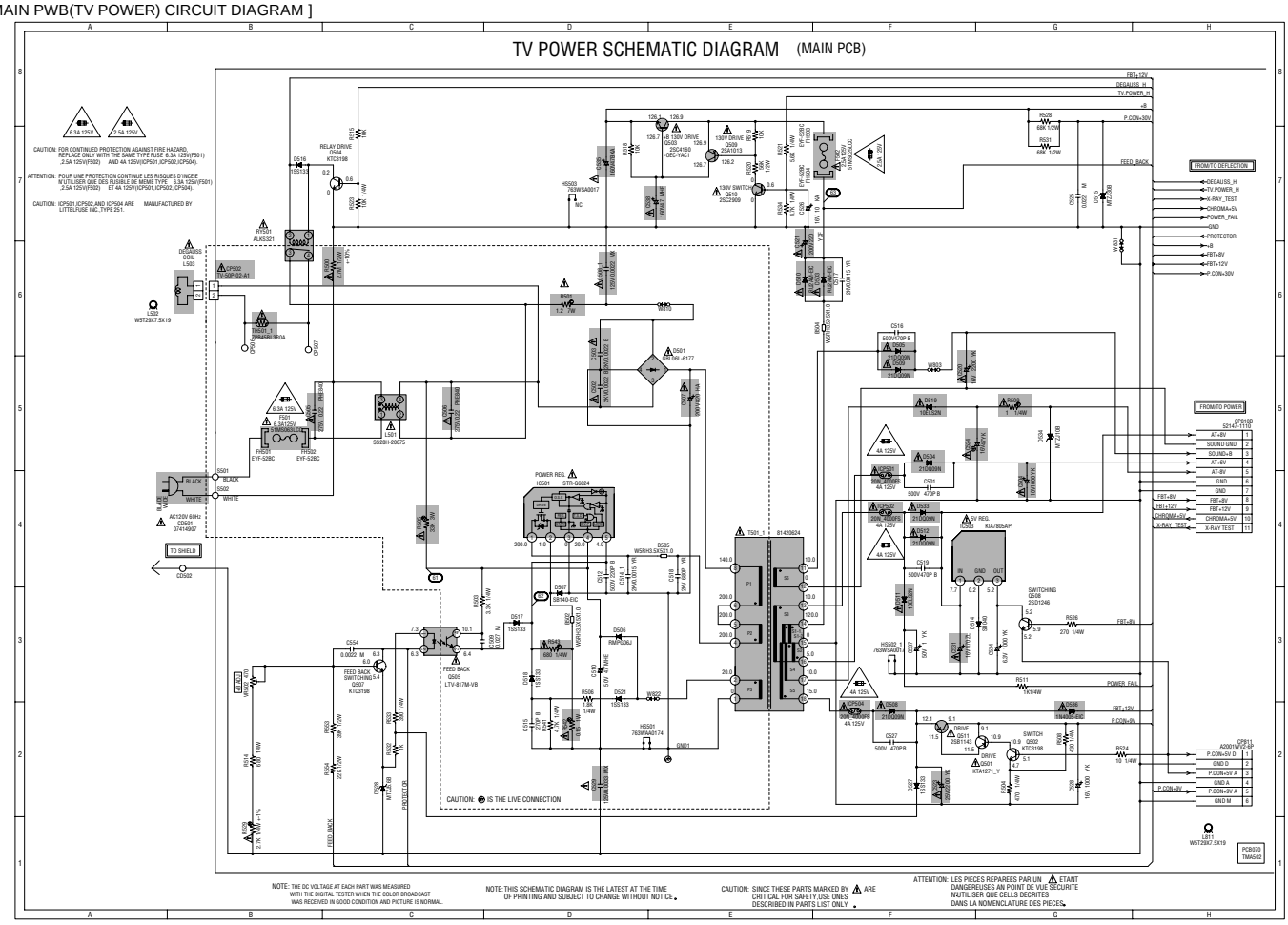
CAUTION: DIGITAL TRANSISTOR

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

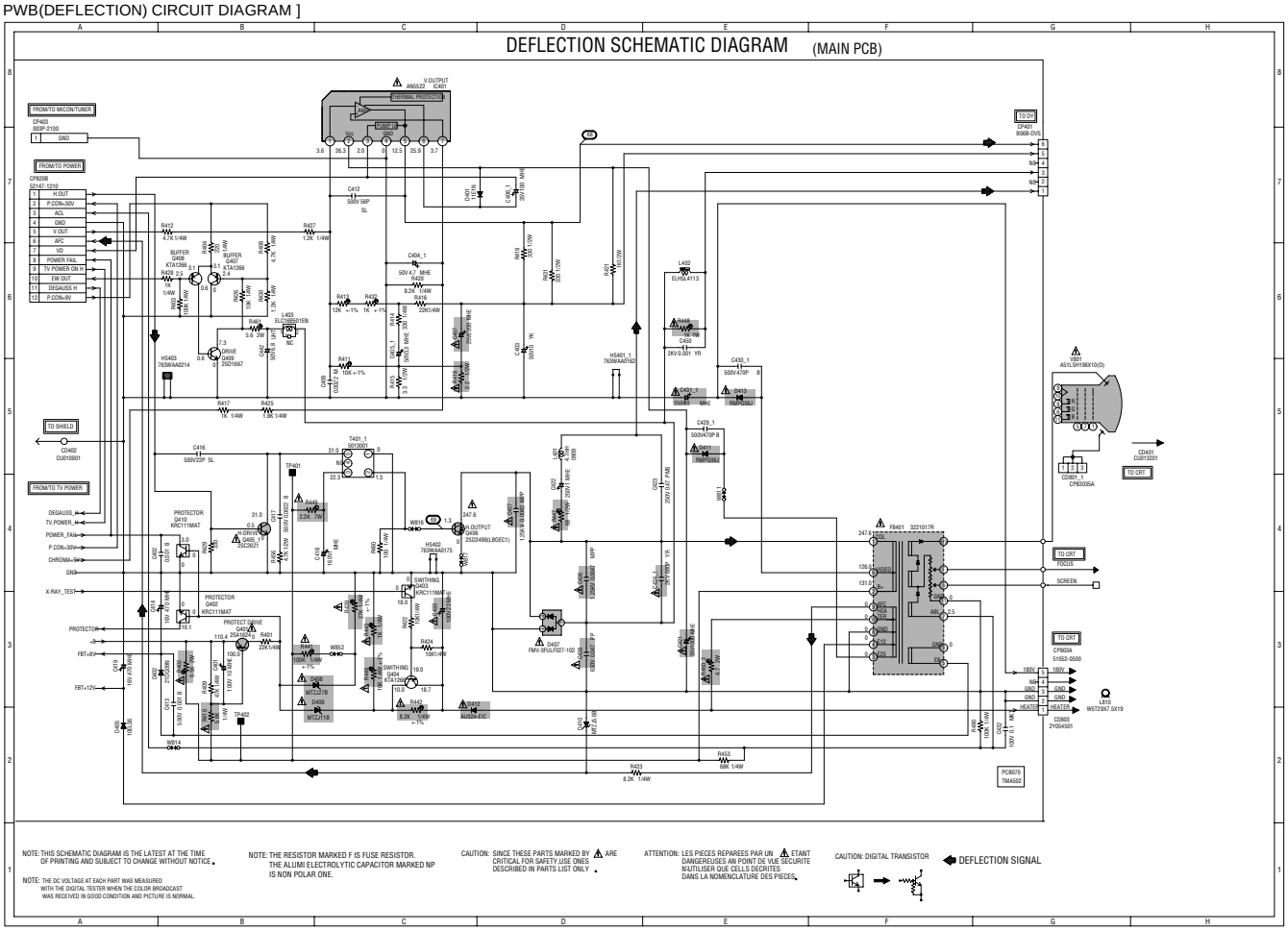
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB030
TEA465

[MAIN PWB(TV POWER) CIRCUIT DIAGRAM]


TV POWER SCHEMATIC DIAGRAM (MAIN PCB)
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 6.3A 125V(F501) ,2.5A 125V(F502) AND 4A 125V(ICP501,ICP502,ICP504).
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCIDIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F501) ,2.5A 125V(F502) ET 4A 125V(ICP501,ICP502,ICP504).
CAUTION: ICP501,ICP502,AND ICP504 ARE MANUFACTURED BY LITTELFUSE INC.,TYPE 251.
CAUTION: ⊕ IS THE LIVE CONNECTION
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAIREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
FROM/TO DEFLECTION
FROM/TO POWER
TO SHIELD
PCB976 TMAG02

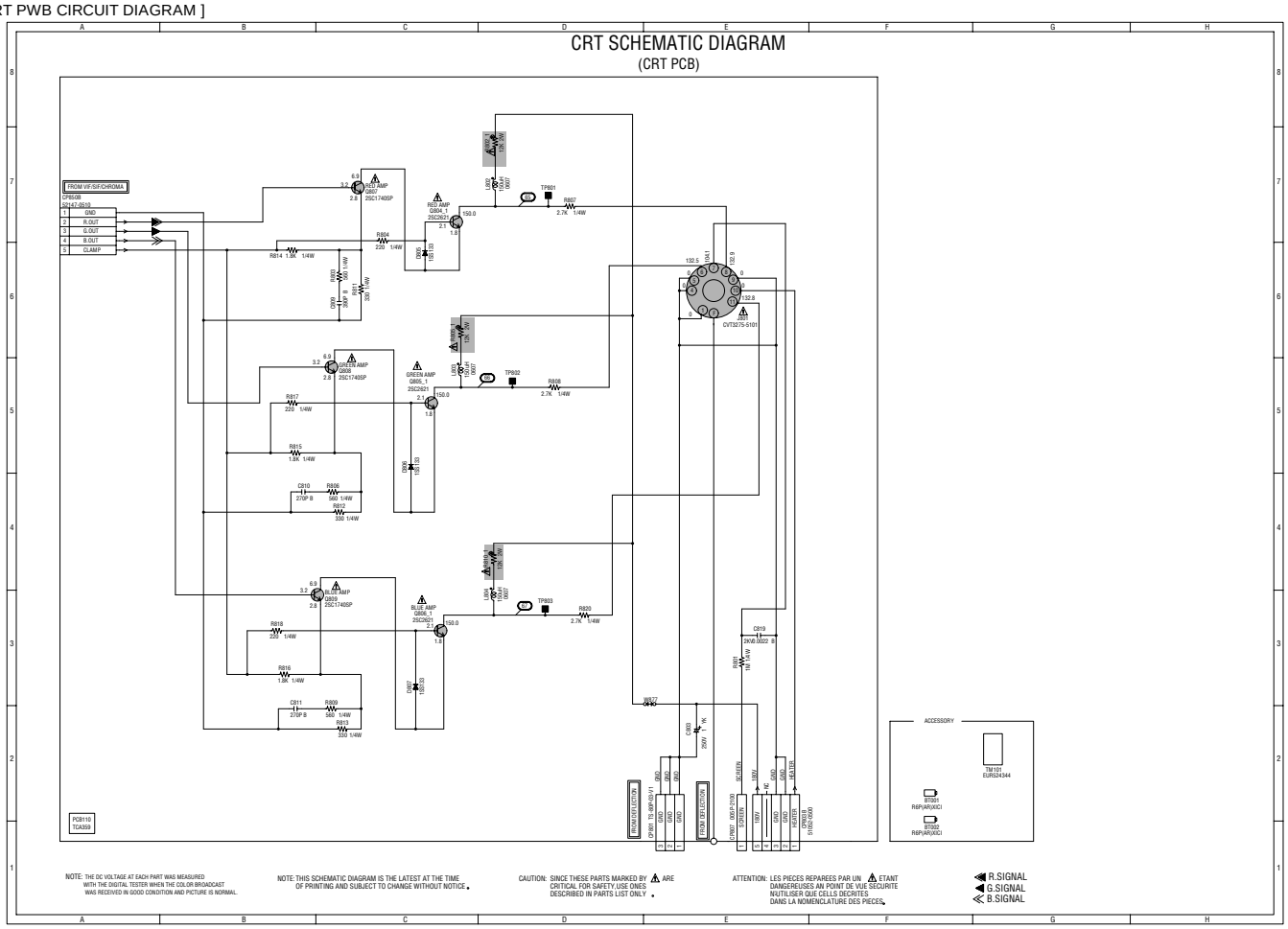
[MAIN PWB(DEFLECTION) CIRCUIT DIAGRAM]


DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: DIGITAL TRANSISTOR
DEFLECTION SIGNAL

[CRT PWB CIRCUIT DIAGRAM]

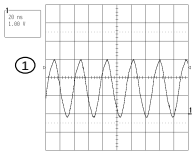
CRT SCHEMATIC DIAGRAM

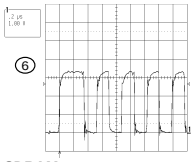
(CRT PCB)

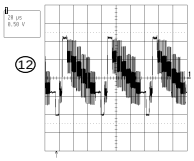


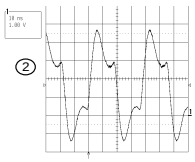
WAVEFORMS

MPEG

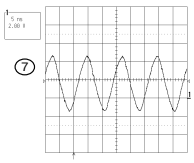




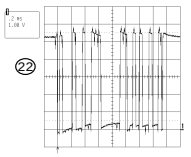


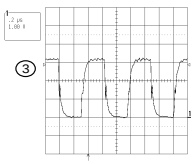


SDRAM

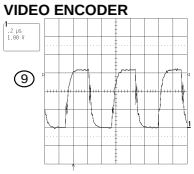


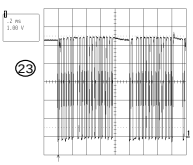
MICON/TUNER

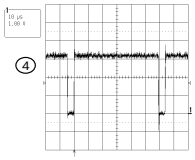


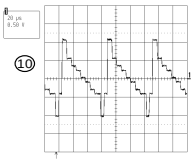


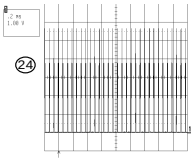
VIDEO ENCODER

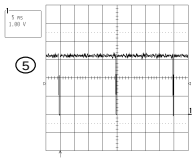


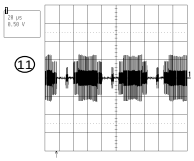


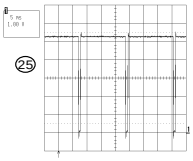




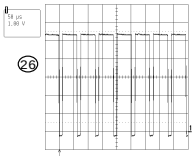


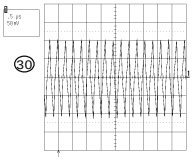


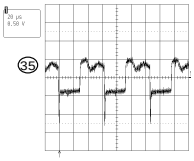




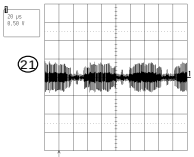
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

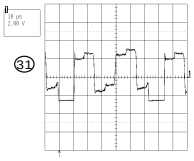


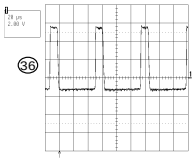




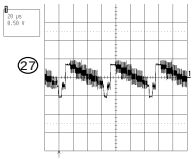
VIF/SIF/CHROMA

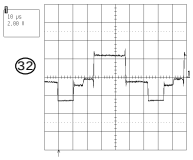


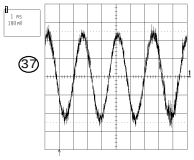


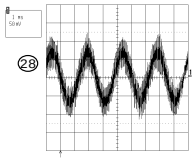


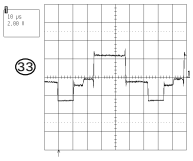
SOUND AMP

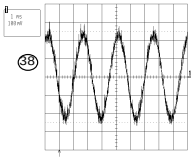




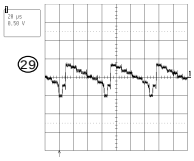


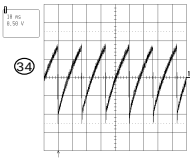


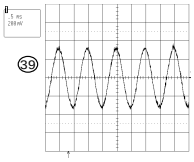




IN/OUT



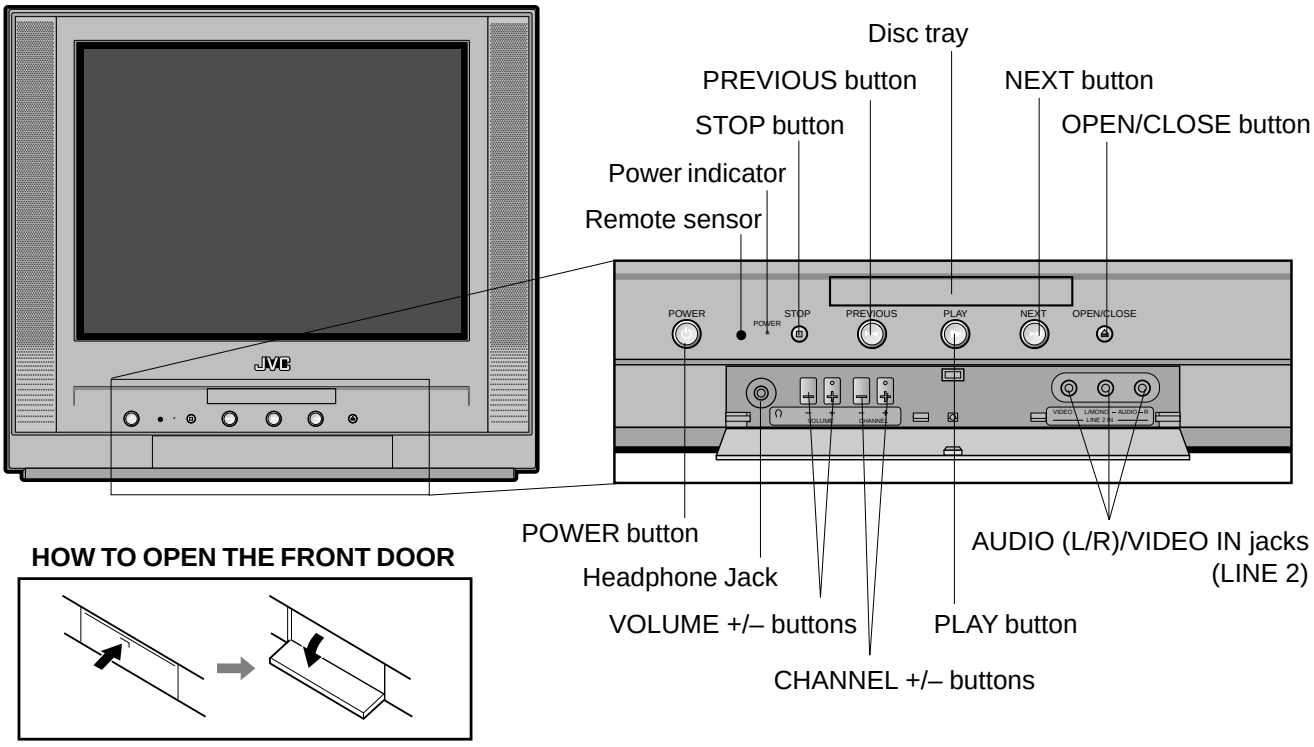




NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

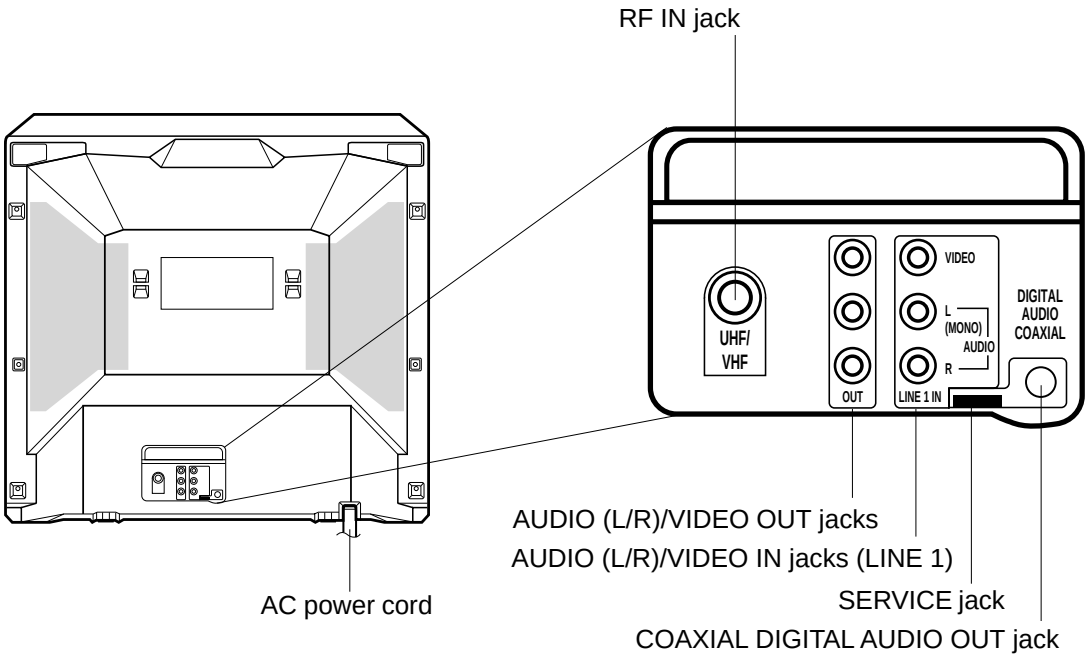
Parts and functions

Front

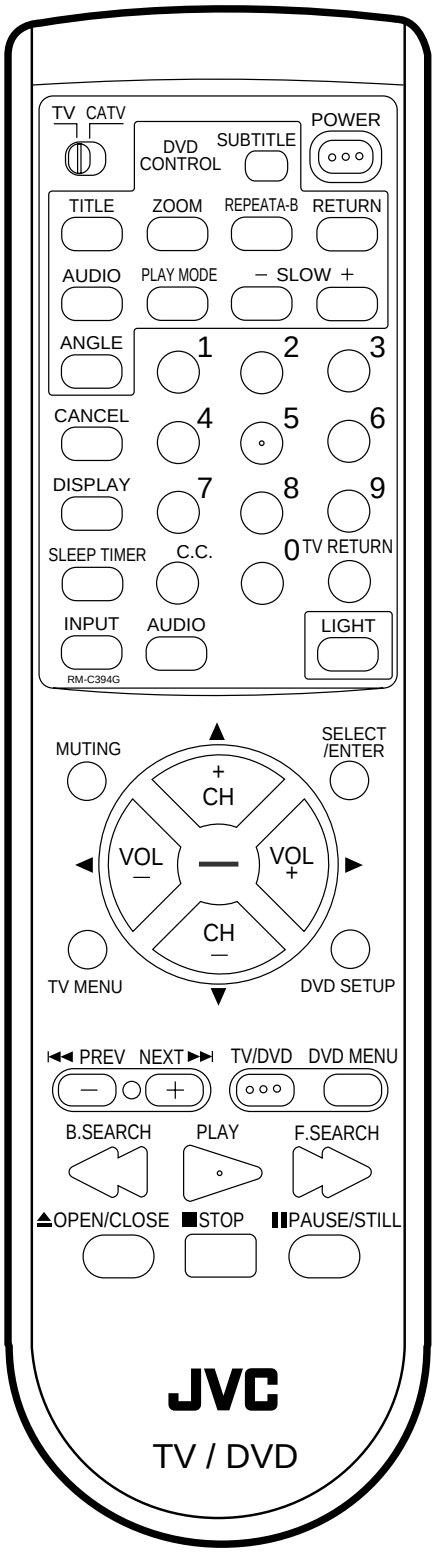


HOW TO OPEN THE FRONT DOOR

Rear



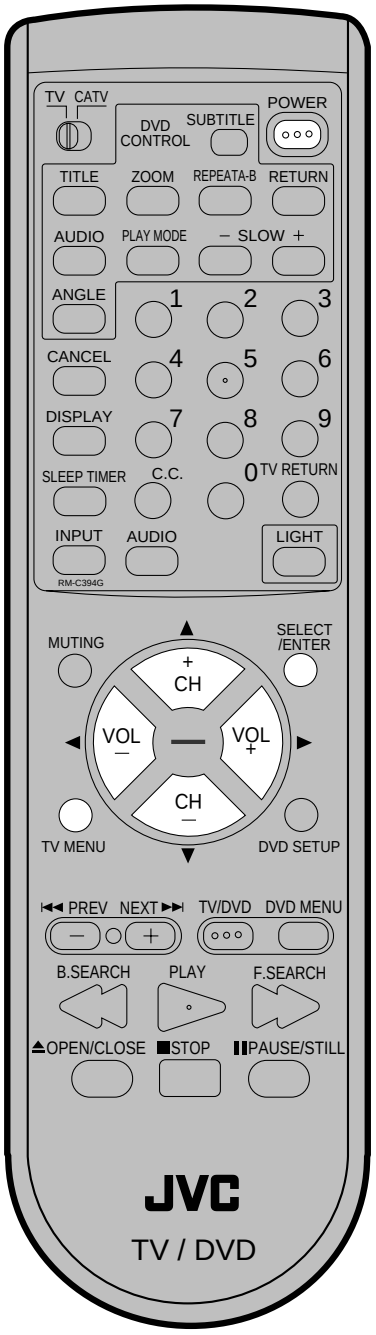
Remote control



		Page
POWER	Power on/off	13,14
RETURN	Remove DVD set up menu	35-42
REPEAT A-B	Repeat playback between A and B	30
SUBTITLE	Set Subtitle	33
TITLE	Select title	34
ZOOM	Zoom	29
AUDIO (for TV)	Switch the sound of TV	23
PLAY MODE	Select playback mode	30,31
SLOW+/–	Forward/Reverse-slow motion	28
ANGLE	Change playback angle	34
0-9	Direct channel selection of TV Input setting Enter a password	14,18 31 19,21,35-37
CANCEL	Reset information in the menu	22,24
DISPLAY	Call information	15
SLEEP TIMER	Set sleep timer	15
INPUT	Switch between TV channel/LINE	45
AUDIO (for DVD)	Change sound track language of DVD	32
C.C.	Switch between TV/Caption/Text in Closed Caption mode	16
TV RETURN	Switch between present/last channels	15
LIGHT	Turn the illumination on for CH and VOL	10
MUTING	Turn the sound on and off	14
TV MENU	Display menu of TV setup	13,17-22,24
DVD SETUP	Display menu of DVD setup	26,35,36,38-42
SELECT/ENTER	Enter information in the menu Select option in the menu	13,19,21,26, 27,29-31,34-42
PREV/NEXT	Skip chapter to forward or reverse direction	28
TV/DVD	Switch between the TV mode/ DVD mode	10,26
DVD MENU	Display menu of DVD software	34
B.SEARCH/F.SEARCH	Fast Forward/Review playback	28
PLAY	Playback	27,28,31,34
OPEN/CLOSE	Open the tray/ Close the tray	27
PAUSE/STILL	Pause CD sound/Still picture of DVD	28
STOP	Stop	27
CH +/– (▲▼)	Select channel of TV Cursor buttons	15 13,17-22,24,26-31,34-42
VOL +/– (◀ ▶)	Adjust volume Cursor buttons	14 13,17-22,24,26-31,34-42
TV/CATV switch	Switch to operate TV or CATV	10,50

Setting the language

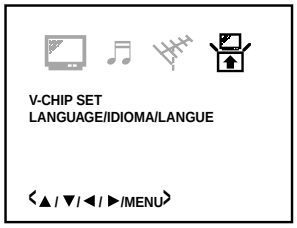
You can choose from three different languages (English, French and Spanish) for the on-screen displays. Adjustment menus and messages will appear in the language of your choice.
On-screen language selection (step 5) will automatically appear on the screen when you press the MENU button initially. Select the language you prefer first, then proceed with the other menu options.



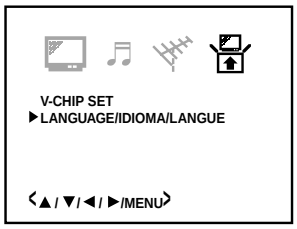
1 To turn on the TV/DVD, press **POWER**. The Power indicator will light.

2 Press **TV MENU**. The TV menu screen will appear.

3 Press ◄ or ► until the SET-UP menu appears.



4 Press ▲ or ▼ to select the "LANGUAGE" option, then press ◄ or ► button.



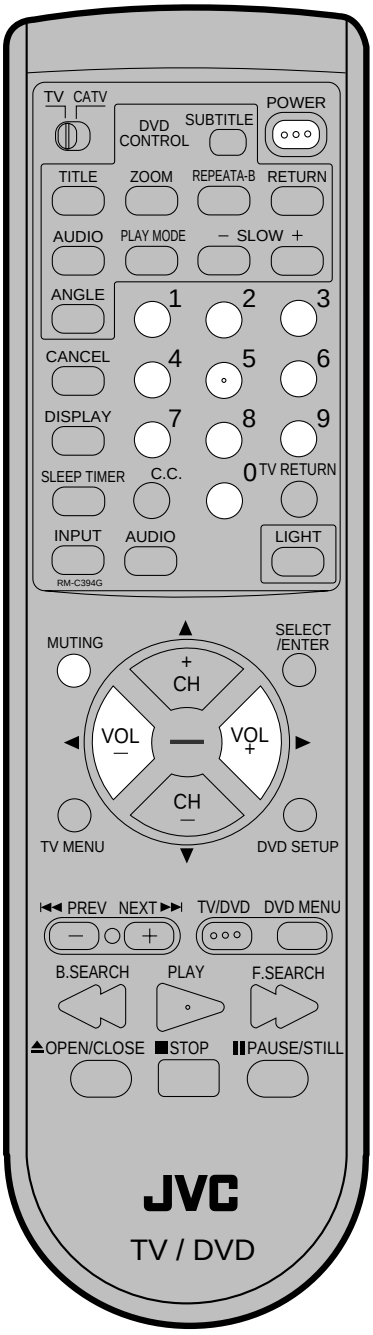
5 Press ▲ or ▼ to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press **ENTER**.

Press **TV MENU** until the MENU screen is cleared.

NOTE:

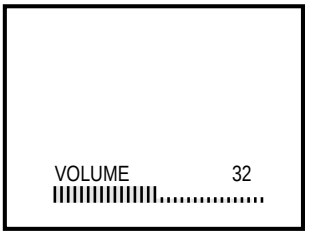
- **If the unit does not operate properly, or No key operation (by the unit and/ or the remote control):** Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.
- The TV section has its own menu and also DVD section has its own menu (see page 26).

TV operation



1 To turn on the TV/DVD, press **POWER**.

2 Adjust the volume level by pressing **VOL +** or **–**. The volume level will be indicated on the screen by green bars. As the volume level increases, so do the number of bars. If the volume decreases, the number of green bars also decreases.

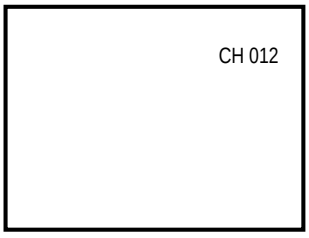


3 Set the TV/CATV menu option to the appropriate position. (See page 17.)

TV - VHF/UHF channels
CATV - CABLE TV channels

4 Press the Direct Channel selection buttons to select the channel.

TV Mode Direct Channel Selection
When the TV/CATV menu option is in the TV position, all channels can be instantly selected by using two buttons. (for example, to select channel 2, press "**0**", then "**2**". If you press only "**2**", channel selection will be delayed for a few seconds.) For channels 10 and above, press the 2 digits in order.



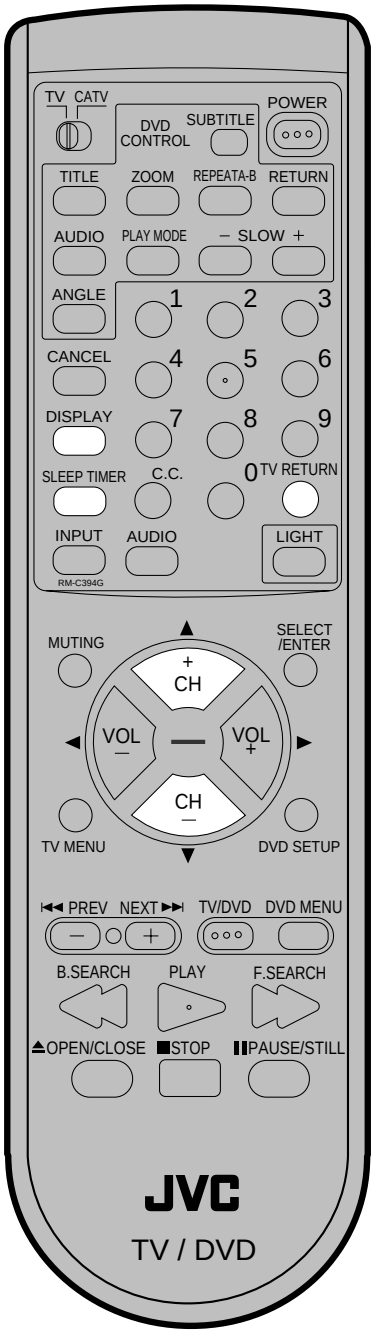
CATV Mode Direct Channel Selection
When the TV/CATV menu option is in the CATV position, channels can be selected as follows:
TO SELECT CATV CHANNELS:

1-9: Press "**0**" twice, then 1-9 as needed. Example, to select channel 2, press "**002**".
10-12: Press "0", then the remaining 2 digits. Example, to select channel 12, press "**012**".
13-99: Press the 2 digits in order. Example, to select channel 36, press "**36**".
100-125: Press the 3 digits in order. Example, to select channel 120, press "**120**".

NOTE FOR CHANNELS 1-12:
If only 1 or 2 buttons are pressed, the corresponding channel will be selected in 2 seconds.

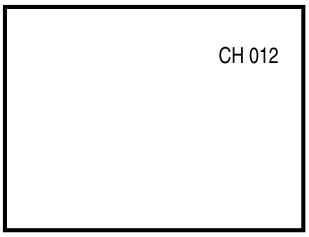
MUTING
The **MUTING** button instantly turns the volume down completely when you press it.
Press **MUTING** button and the volume level will instantly go to zero. To restore the volume to its previous level, press **MUTING** button again.

NOTES:
- If a channel with no broadcast is selected, the sound will automatically be muted.
- If a station being viewed stops broadcasting, the TV will automatically shut itself off after 15 minutes.



CHANNEL UP/DOWN

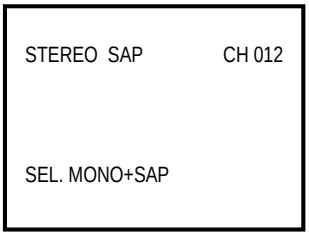
Press and release **CH +** or **–**. The channel automatically stops at the next channel set into memory.
For proper operation, before selecting channels, they should be set into the memory. See pages 17 and 18 “To memorize channels”



DISPLAY

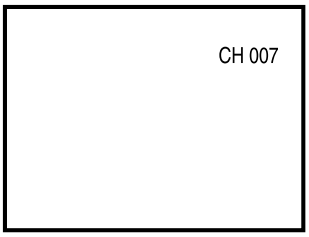
Press **DISPLAY** to display the current informations on the screen. Press **DISPLAY** again to disappear the call display.

- Channel number or VIDEO mode
- Stereo or SAP (second audio program) audio status
- Audio output status



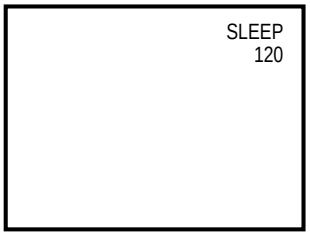
TV RETURN

This button allows you to go back to the last channel selected by pressing **TV RETURN**. Press **TV RETURN** again to return to the last channel you were watching.



SLEEP TIMER

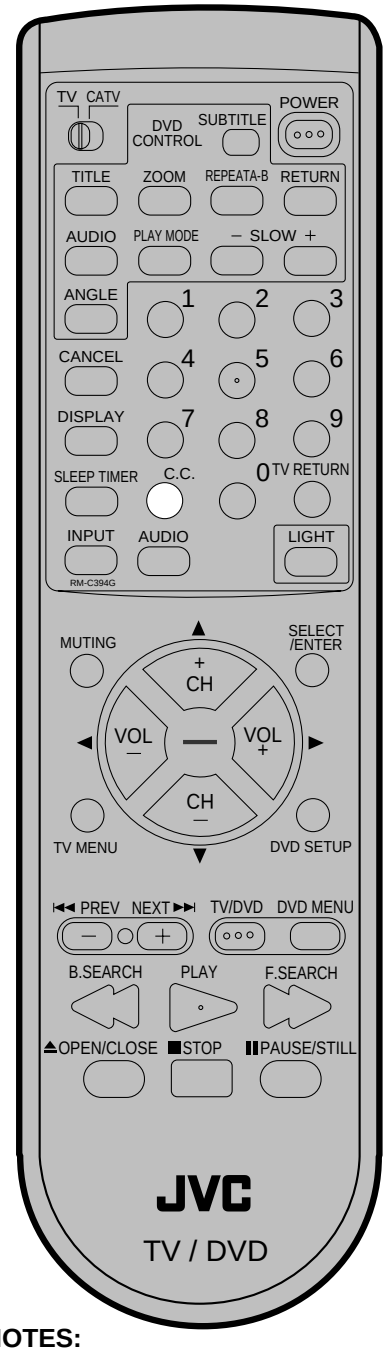
To set the TV/DVD to turn off after a preset amount of time, press **SLEEP TIMER** on the remote control. The clock will count down 10 minutes for each press of **SLEEP TIMER** (120, 110, ...10, 0). After the sleep time is programmed, the display will appear briefly every ten minutes to remind you that the sleep timer is operating. To confirm the sleep timer setting, press **SLEEP TIMER** and the remaining time will be displayed for a few seconds. To cancel the sleep timer, press **SLEEP TIMER** repeatedly until the display turns to 0.



Closed caption

WHAT IS CLOSED CAPTIONING?

This television has the capability to decode and display Closed Captioned television programs. Closed Captioning will display text on the screen for hearing impaired viewers or it will translate and display text in another language.

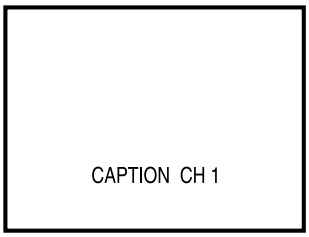


Captions: This Closed Caption Mode will display text on the screen in English or another language (depending on the setting of the Closed Captions CH 1/2).
Generally, Closed Captions in English are transmitted on Captions Channel 1 and Closed Captions in other languages are transmitted on Captions Channel 2.

Text: The Text Closed Caption Mode will usually fill the screen with a programming schedule or other information.
After selecting a Closed Caption Mode, it will stay in effect until it is changed, even if the channel is changed.
If the Captions signal is lost due to a commercial or a break in the signal, the Captions will reappear when the signal is received again. If the channels are changed, the Captions will be delayed approximately 10 seconds. The Captions will appear in places on the screen where they will least interfere with the picture, usually on the bottom of the screen. News programs will usually show three-line Closed Captions which scroll onto the screen.
Most other shows provide two or three lined Captions placed near the character who is speaking so the viewer can follow the dialogue. Words in italics or underlined describe titles, words in foreign languages or words requiring emphasis. Words that are sung usually appear enclosed by musical notes.
For television programs broadcasting with Closed Captions, look in your TV guide for the Closed Captions symbol (CC).

TO VIEW CLOSED CAPTIONS

Press **C.C.** to switch between normal TV and the two closed caption modes (captions and full screen text). Closed captioning will display text on the screen for hearing impaired viewers.

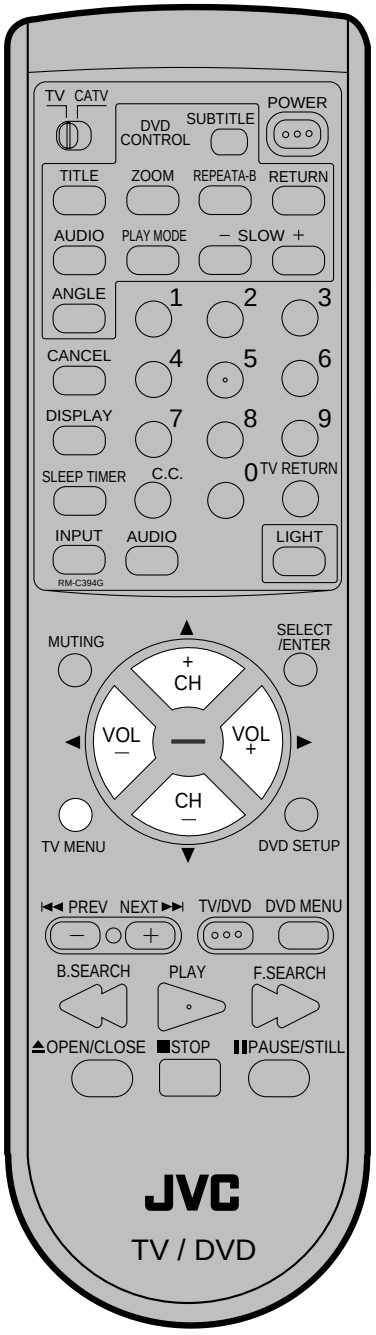


NOTES:

- When selecting Closed Captions, the captioning will be delayed approximately 10 seconds.
- If no caption signal is received, no captions will appear, but the television will remain in the Caption Mode.
- Misspellings or unusual characters may occasionally appear during Closed Captioning. This is normal with Closed Captioning, especially with live programs. This is because during live programs, captions are also entered live. These transmissions do not allow time for editing.
- When Captions are being displayed, on-screen displays, such as volume and mute may not be seen or may interfere with Closed Captions.
- Some cable systems and copy protection systems may interfere with the Closed Captioned signal.
- If using an indoor antenna or if TV reception is very poor, the Closed Caption Decoder may not appear or may appear with strange characters or misspelled words. In this case, adjust the antenna for better reception or use an outdoor antenna.

To memorize channels

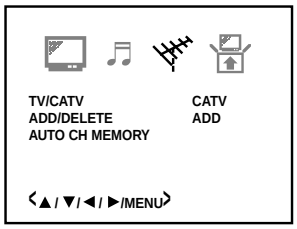
This TV/DVD is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the TV/DVD's memory. In addition to normal VHF and UHF channels, this TV/DVD can receive up to 113 Cable TV channels. To use this TV/DVD with an antenna, set the TV/CATV menu option to the TV mode. When shipped from the factory, this menu option is in the CATV mode.



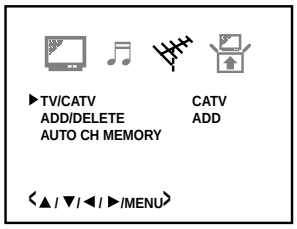
TV/CATV SELECTION

1 Press **TV MENU** in the TV mode.
The TV menu screen will appear.

2 Press ◀ or ▶ until the CHANNEL-SETUP menu appears.

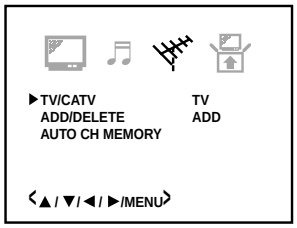


3 Press ▲ or ▼ to select the "TV/CATV".

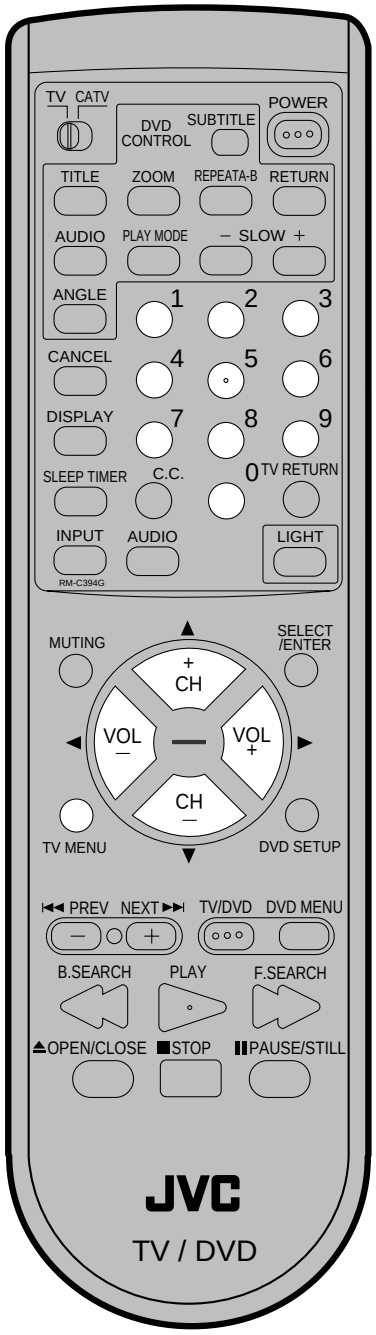


4 Press ◀ or ▶ to select the TV or CATV mode.

TV - VHF/UHF channels
CATV - CABLE TV channels



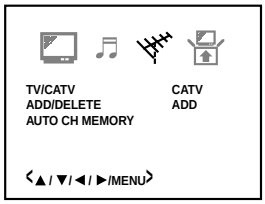
5 Press **TV MENU** until the MENU screen is cleared.



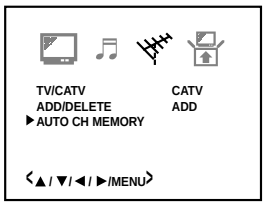
AUTOMATIC MEMORY TUNING

1 Press **TV MENU** in the TV mode. The TV menu screen will appear.

2 Press ◀ or ▶ until CHANNEL-SETUP menu appears.



3 Press ▲ or ▼ to select the "AUTO CH MEMORY", then press ◀ or ▶. The TV will begin memorizing all the channels available in your area.



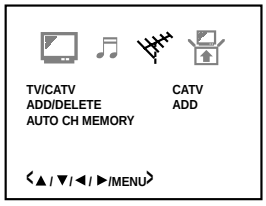
4 Press **TV MENU** until the MENU screen is cleared.

TO ADD/DELETE CHANNELS

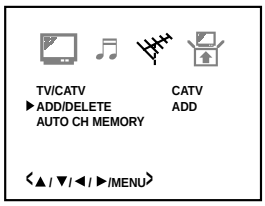
1 Select the desired channel to be memorized or deleted using **Direct Channel Selection (0-9)**, or **CH +** or **–**.

2 Press **TV MENU** in the TV mode. The TV menu screen will appear.

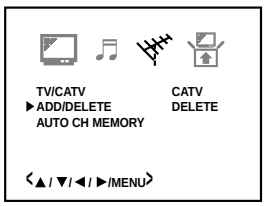
3 Press ◀ or ▶ until CHANNEL-SET UP menu appears.



4 Press ▲ or ▼ to select the "ADD/ DELETE".



5 Press ◀ or ▶ to select ADD or DELETE, whichever function you want to perform.

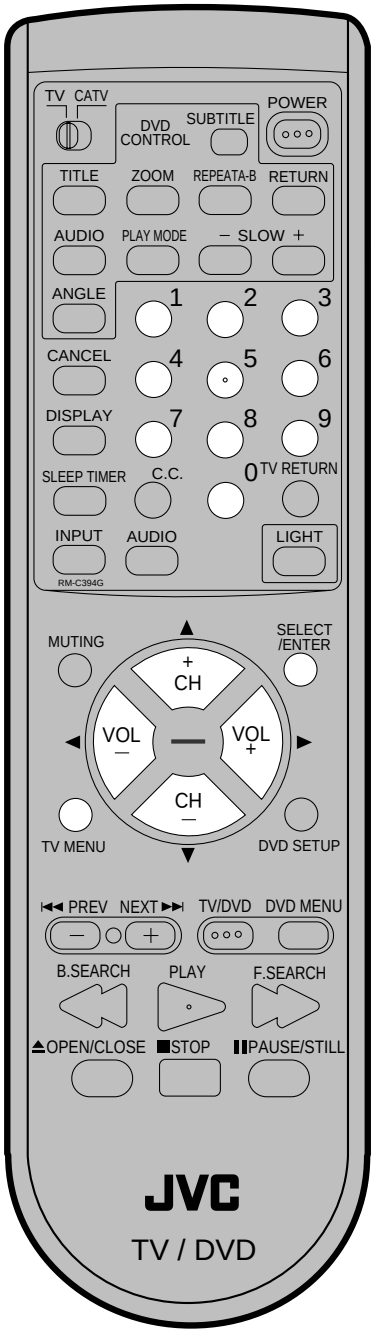


6 Press **TV MENU** until the MENU screen is cleared.

7 Repeat steps 1-6 for other channels you want to add or delete.

Setting the V-Chip

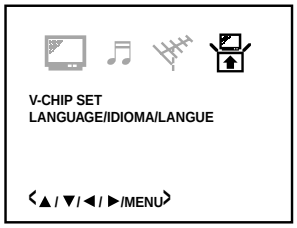
An age limitation can be set to forbid children to see and hear violent scenes or pictures for adults, etc. The TV/DVD corresponds to "TV RATING" and "MOVIE RATING". To use the V-Chip function, you must register a password.



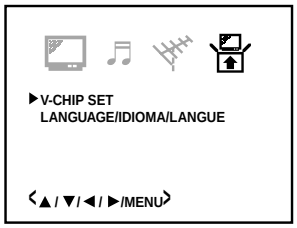
TO REGISTER PASSWORD

1 Press **TV MENU** in the TV mode. The TV menu screen will appear.

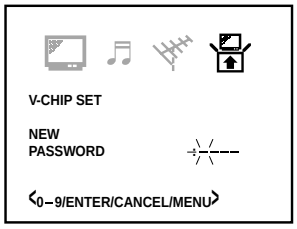
2 Press ◀ or ▶ until the SETUP menu appears.



3 Press ▲ or ▼ to select the "V-CHIP SET", then press ◀ or ▶.

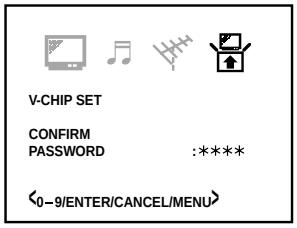


4 Enter the password (4 digits) using **Direct Channel Selection (0-9)**, then press **ENTER**.



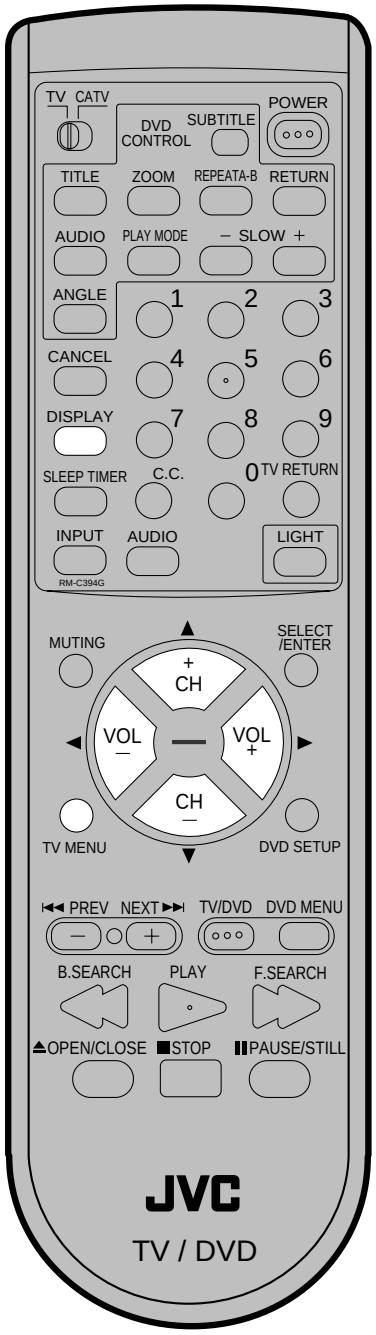
"∗" appears instead of the number.

5 Enter the same password again for the safety, then press **ENTER**. Now the password was registered and V-Chip setting menu will appear on the display.



NOTES:

- If you forget the password, you cannot set the V-Chip.
- To avoid forgetting the password, write it down and keep in the safe place.



To use after the TV is protected

When the program applied to the V-Chip setting is received, enter the password. Protection can be cancelled.

NOTE:

The V-Chip function is activated only on programs and tapes that have the rating signal.

TO SET THE V-CHIP

1 In the V-CHIP SET menu, press ▲ or ▼ to select the "US TV RATING".

```
V-CHIP SET
V-CHIP              : OFF
▶US TV RATING       : TV-Y
MOVIE RATING        : OFF
CAN ENG RATING      : OFF
CAN FRE RATING      : OFF
CHANGE PASSWORD

〈▲/▼/◄/►/MENU〉
```

2 Press ◄ or ► to display the desired setting.

OFF : US TV RATING is not set
TV-Y : All children
TV-Y7 : 7 years old and above
TV-G : General Audience
TV-PG: Parental guidance
TV-14 : 14 years old and above
TV-MA: 17 years old and above

When you select TV- Y7, TV-PG, TV-14 or TV-MA, press **DISPLAY** to show the contained rating. Press ▲or▼ to select the desired item you want. Press ◄ or ► to select ON or OFF. If you want to back to V-CHIP SET menu, press **TV MENU**.

3 Press ▲ or ▼ to select the "MOVIE RATING". Press ◄ or ► to select desired rating.

```
V-CHIP SET
V-CHIP              : OFF
US TV RATING        : OFF
▶MOVIE RATING       : G
CAN ENG RATING      : OFF
CAN FRE RATING      : OFF
CHANGE PASSWORD

〈▲/▼/◄/►/MENU〉
```

OFF : MOVIE RATING is not set
G : All ages
PG : Parental guidance
PG-13 : Parental guidance less than 13 years old
R : Under 17 years old Parental guidance suggested
NC-17 : 17 years old and above
X : Adult only

4 Press ▲ or ▼ to select the "CAN ENG RATING", then press ◄ or ► to select desired rating.

```
V-CHIP SET
V-CHIP              : OFF
US TV RATING        : OFF
MOVIE RATING        : OFF
▶CAN ENG RATING     : G
CAN FRE RATING      : OFF
CHANGE PASSWORD

〈▲/▼/◄/►/MENU〉
```

E: Exempt
Exempt programming includes: news, sports, documentaries and other information programming, talk shows, music videos, and variety programming.

C: Programming Intended for Children
Violence Guidelines: There will be no realistic scenes of violence. Depictions of aggressive behavior will be infrequent and limited to portrayals that are clearly imaginary, comedic or unrealistic in nature.

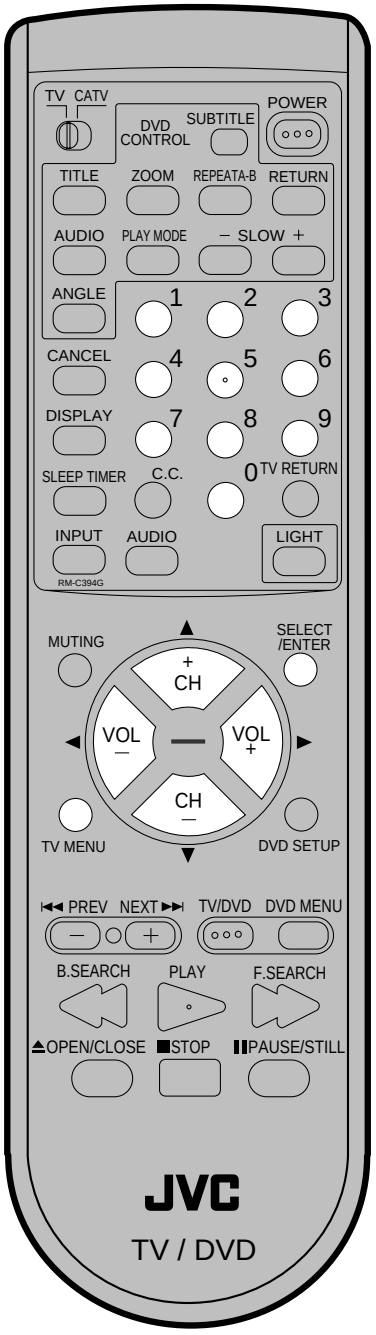
C8+: Programming Intended for Children 8 and Over
Violence Guidelines: Any realistic depictions of violence will be infrequent, discreet, of low intensity and will show the consequences of the acts. There will be no offensive language, nudity or sexual content.

G: General Audience
Programming will contain little violence and will be sensitive to themes which could affect younger children.

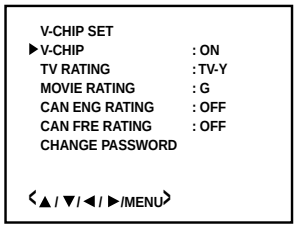
PG: Parental Guidance
Programming intended for a general audience, but which may not be suitable for younger children. Parents may consider some content not appropriate for children aged 8-13.

14+: 14 Years and Older
Parents are strongly cautioned to exercise discretion in permitting viewing by preteens and early
teens. Programming may contain mature themes and scenes of intense violence.

18+: Adult
Material intended for mature audiences only.



5 Press ▲ or ▼ to select "V-CHIP". Press ◀ or ▶ to display "ON" to activate the V-Chip function.

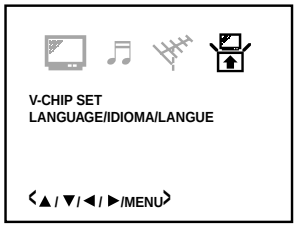


6 Press **TV MENU** until the MENU screen is cleared.

TO CHANGE PASSWORD

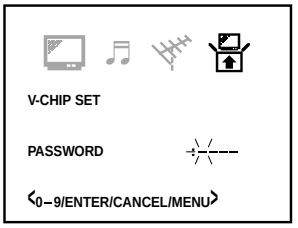
1 Press **TV MENU** in the TV mode. The TV menu screen will appear.

2 Press ◀ or ▶ until SETUP menu appears.

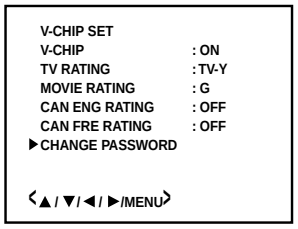


3 Press ▲ or ▼ to select the "V-CHIP SET", then press ◀ or ▶.

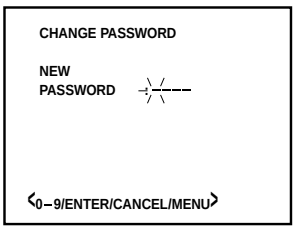
4 Enter the Password using **Direct Channel Selection (0-9)**, then press **ENTER**.



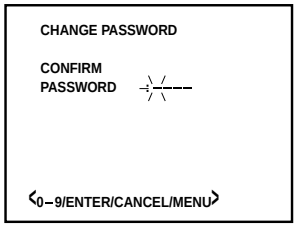
5 Press ▲ or ▼ to select "CHANGE PASSWORD", then press ◀ or ▶.



6 Enter the new password using **Direct Channel Selection (0-9)**, then press **ENTER**.



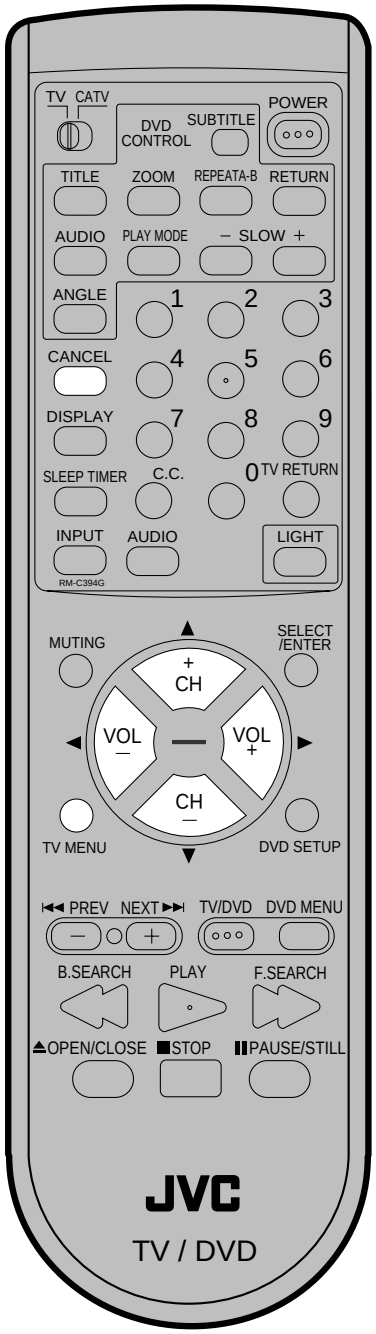
7 Enter the same password again for safety, then press **ENTER**.



8 Press **TV MENU** repeatedly to return to normal screen.

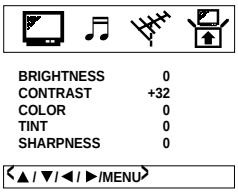
Picture control adjustment

Picture controls are factory preset but you can adjust them individually as follows:

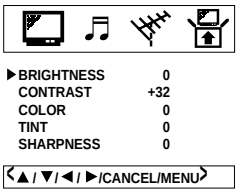


1 Press **TV MENU** in the TV mode. The TV menu screen will appear.

2 Press ◀ or ▶ until PICTURE menu appears.



3 Press ▲ or ▼ to select the item you want to adjust.



4 Press ◀ or ▶ to adjust the setting.

	▶	◀
BRIGHTNESS	increase brightness	decrease brightness
CONTRAST	increase contrast	decrease contrast
COLOR	be brilliant color	be pale color
TINT	be greenish color	be reddish color
SHARPNESS	makes picture clearer	makes picture softer

5 After your desired setting press **TV MENU** until the MENU screen is cleared.

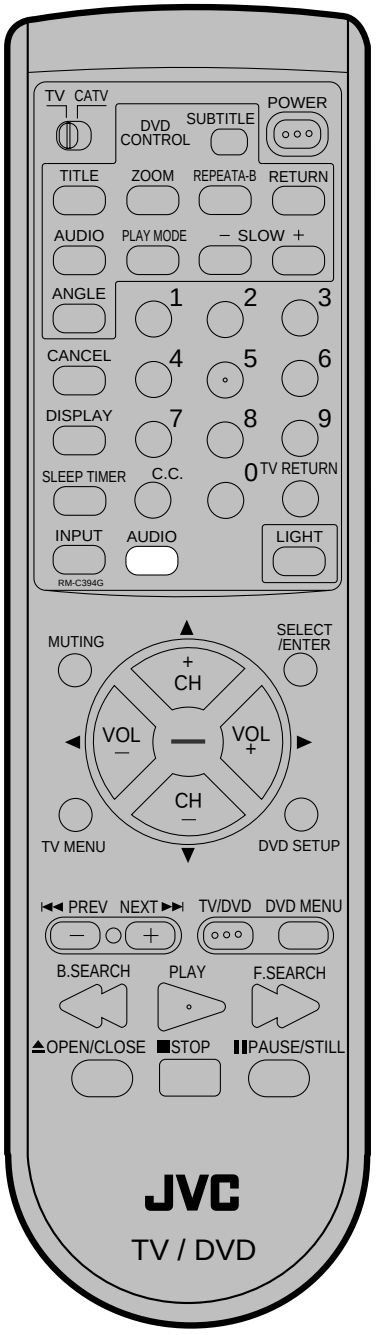
CANCEL

Pressing **CANCEL** while making picture adjustments will return all adjustments to the factory preset levels.

NOTE:
The CONTRAST default setting is set to maximum at the factory.

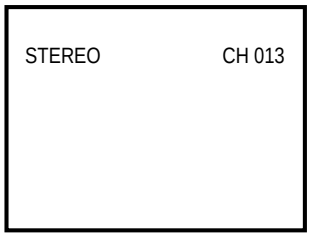
Stereo and separate audio program (SAP)

The TV/DVD is equipped with a feature known as Multi-channel TV Sound or MTS. MTS broadcasts greatly enhance TV viewing by bringing you programs with high fidelity stereo sound.
MTS also provides an extra channel called the Separate Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmission or for other purposes.



LISTENING TO STEREO SOUND

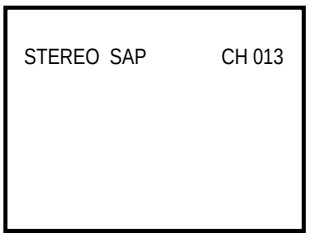
When the TV is turned on or a channel selection is made, make certain the STEREO appears on the screen. This means that "Stereo" broadcasting is available. You can enjoy stereo sound from the left and right speakers.



- When "Mono" broadcasting is received, no indication is displayed.
- If the broadcast signal is not strong enough or clear stereo sound is not available, press **AUDIO** on the center of the remote control to change to mono sound. The noise should be eliminated. Press it again to return to the stereo sound.

LISTENING TO SAP (SEPARATE AUDIO PROGRAM)

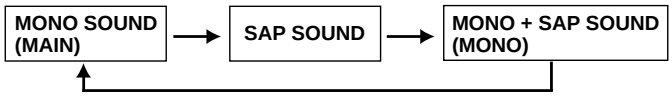
When the TV is turned on or a channel selection is made, make certain the SAP appears on the screen. This means that the "Separate Audio Program" broadcasting is available.



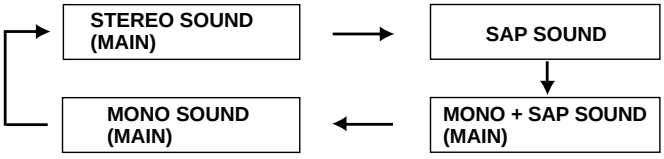
TO SELECT DESIRED SOUND

Press **AUDIO** to select the desired sound.

MONO+SAP BROADCASTING

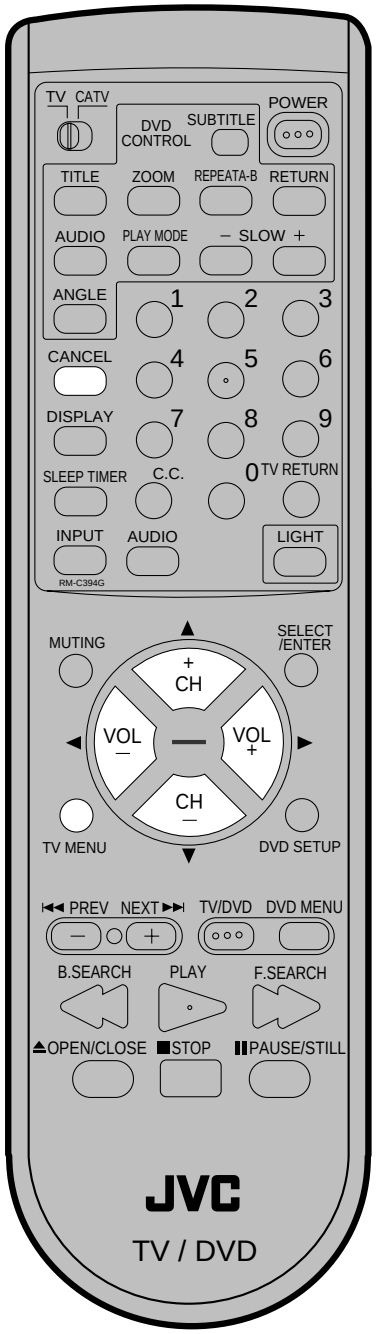


STEREO+SAP BROADCASTING



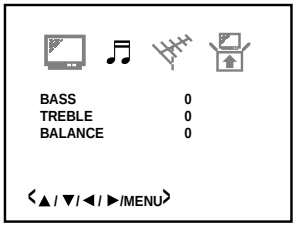
Sound control adjustment

Sound controls are factory preset but you can adjust them individually as follows:

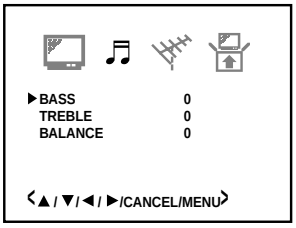


1 Press **TV MENU** in the TV mode.
The TV menu screen will appear.

2 Press ◀ or ▶ until the AUDIO menu appears.



3 Press ▲ or ▼ to select the item you want to adjust.



4 Press ◀ or ▶ to adjust the setting.

BASS:
Press ◀ or ▶ to adjust the bass sound.
TREBLE:
Press ◀ or ▶ to adjust the treble sound.
BALANCE:
Press ◀ or ▶ to obtain an equal sound level from both speakers.

5 After your desired setting press **TV MENU** until the MENU screen is cleared.

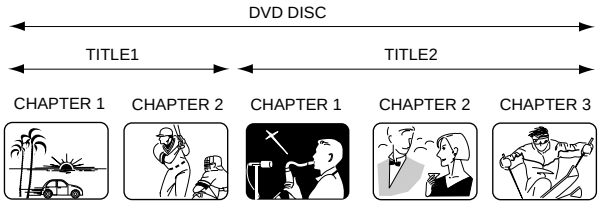
CANCEL
Pressing **CANCEL** while making sound adjustments will return all adjustments to the factory preset levels.

The unit detects whether the disc loaded is a DVD disc or Audio CD and automatically sets the mode.

Disc Notes

Do not play DVD-ROM, DVD-Audio, CD-ROM, CD-R, CDV, CD-G, Video CD or Photo CD to prevent accidental erasure of prerecorded material.
This unit applies to DVD discs from Region 1 only. Other Region number discs cannot be played with this unit.
This unit does not play MP3 files.

Title/Chapter/Track



Title

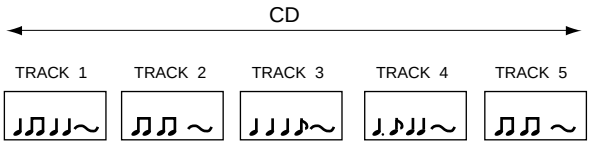
When two or more movies are recorded on a disc, the disc is divided into two or more sections. Each section is called a “TITLE”.

Chapter

The titles can be subdivided into many sections. Each section is called a “CHAPTER”.

Track

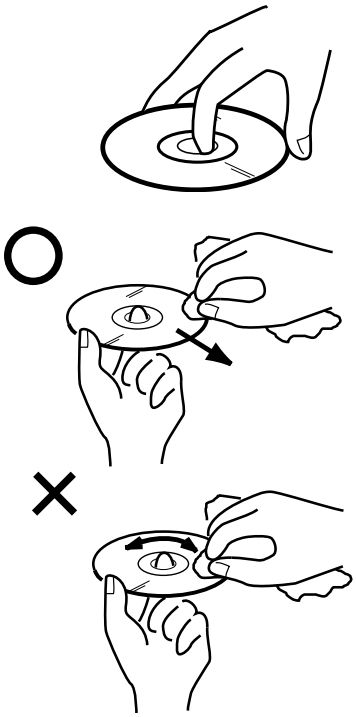
An Audio CD can contain several items.
These are assigned to the tracks.



Removing Disc from Case

Be sure to hold the edge of disc. Do not touch the surface of the disc.
Pick up the disc gently from the case.

- Do not scratch the disc.
- Do not get dirt on the surface of the disc.
- Do not stick a label or adhesive tape on the disc.
- Do not drop or bend the disc.



Storing Disc

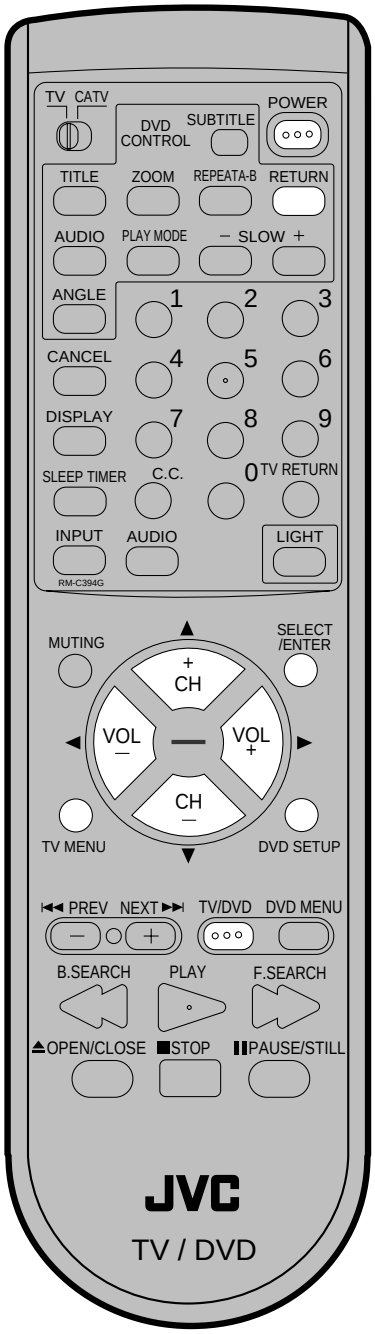
- Store the disc in the case to avoid risk of scratches, dirt or damage.
- Do not leave disc exposed to direct sunlight or in hot or humid places.

Cleaning Disc

Wipe the disc with a clean, dry cloth from centre to edge.
- Do not wipe the disc round.
- Do not use liquid or aerosol cleaners.

Setting setup language

The setup language can be selected.



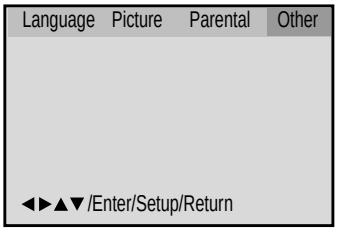
• **If the unit does not operate properly:**
Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

Preparation

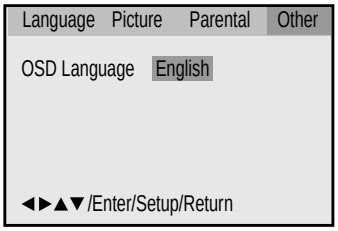
- Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.
  Note: When connecting to other equipment, unplug the unit from the AC outlet.
- Press **POWER** on the unit or on the remote control to turn on the unit. The POWER indicator will light.
- When using an amplifier, switch on the amplifier.

1 Press **TV/DVD** to select the DVD mode.
"READING" changes "NO DISC".
(If DVD disc has already loaded, the playback will start automatically.)

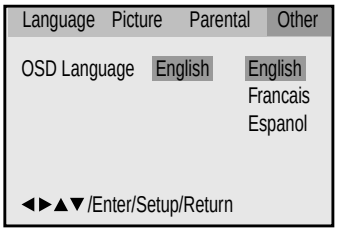
2 Press **DVD SETUP** in the stop mode.
Press ◀ or ▶ to select Other.



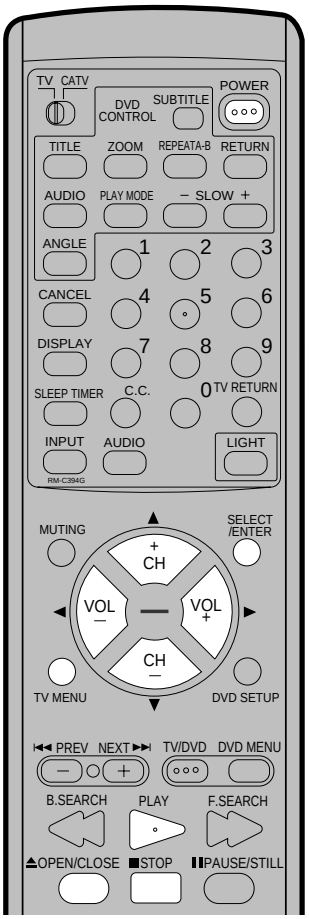
3 Press ▼ to select OSD Language.



4 Press ▶ and then press ▲ or ▼ to select desired language(e.g. English), then press **ENTER**.



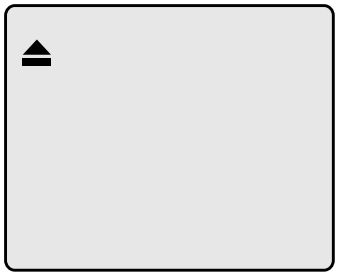
NOTE: To make SETUP screen disappear, press **DVD SETUP** (or **RETURN**) while the SETUP screen is shown.



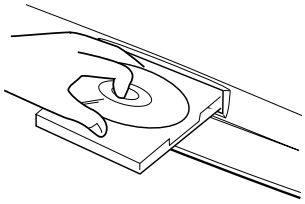
Note:

- If a non-compatible disc is loaded, "Incorrect Disc", "Region Code Error" or "Parental Error" will appear on the TV screen according to the type of loaded disc. In this case, check your disc again (See pages 25 and 35).
- Some discs may take a minute or so to start playback.
- When you set a single-faced disc label downwards (ie. the wrong way up) and press **PLAY** or **OPEN/CLOSE** on the unit, "Reading" will appear on the display for 10 seconds and then "No Disc" will continue to be displayed.
- Some playback operations of DVDs may be intentionally fixed by software producers. Since this unit plays DVDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs.
- When playing DTS-encoded Audio CDs, excessive noise will be heard from the analogue stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analogue stereo outputs of the DVD player are connected to an amplification system.

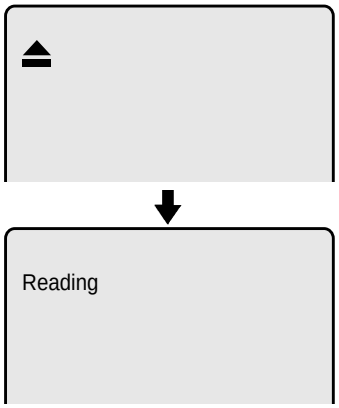
1 Press **OPEN/CLOSE** on the unit. The disc tray will open.



2 Place a disc onto the tray. Hold the disc, position it with the printed label side up, align it with the guides, and place it in its proper position.



3 Press **PLAY** or **OPEN/CLOSE** on the unit.
The disc tray closes automatically.
On the TV-screen, ⏏ changes to "Reading" and then playback commences.



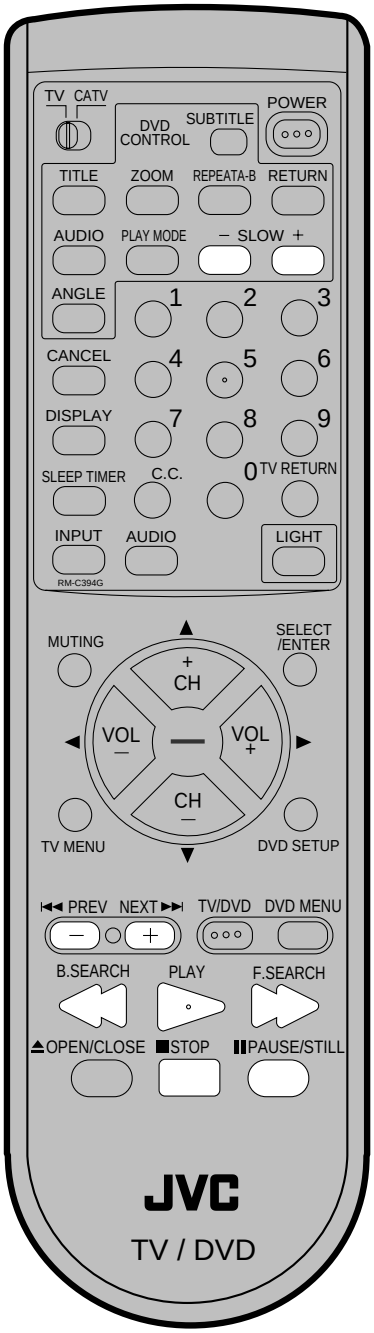
- A menu screen may appear on the TV screen, if the disc has a menu feature. In this case, press ▲, ▼, ◀, ▶ or **SELECT** to operate a menu feature.

4 Press **STOP** to end playback.
- The unit records the stopped point, depending on the disc. "■" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc ("■" appears on the screen.), the unit will clear the stopped point.

5 To stop the playback, press **STOP**.
Then press **OPEN/CLOSE** on the unit.
The disc tray opens.
Remove the disc and press **OPEN/CLOSE** on the unit then press **POWER**.
The disc tray closes automatically and unit turns off.

Special playback

Note: there may be a slight delay between you pressing the button and the function activating.



Note:
The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

Fast Forward Playback

Press **F. SEARCH** during normal playback.
Each press of the **F. SEARCH** button will increase the speed of the search x2, x4, x8, x20.

• To resume normal playback, press **PLAY**.

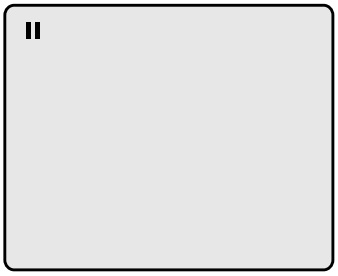
Review Playback

Press **B. SEARCH** during normal playback.
Each press of the **B. SEARCH** button will increase the speed of the search x2, x4, x8, x20.

• To resume normal playback, press **PLAY**.

Still Playback

Press **PAUSE** during normal playback to pause playback.



To resume normal playback, press **PLAY**.

Frame Advance

Press **PAUSE** during still playback.
One frame is advanced each time you press **PAUSE**.

To resume normal playback, press **PLAY**.

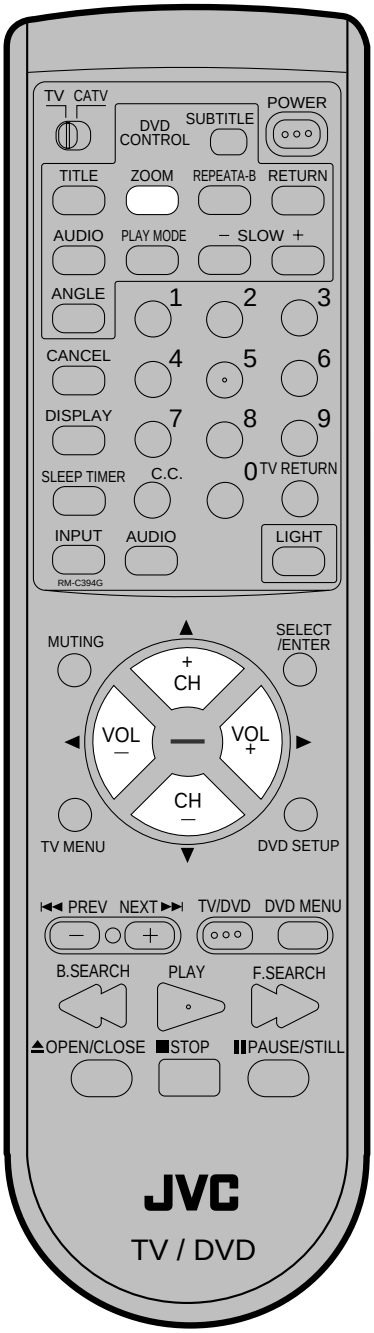
Slow-motion Playback

Press **SLOW (–)** Reverse or **SLOW (+)** Forward during normal playback or still playback.
Each press of **SLOW** will change the speed of the slow x1/2, x1/4, x1/6, x1/7.

• To resume normal playback, press **PLAY**.
• To resume the still playback, press **PAUSE**.

Locating a chapter or track

Press **NEXT (▶▶|)** Forward or **PREV (|◀◀)** Reverse during playback to locate a chapter that you want to watch.
Each time you press the button, a chapter or track is skipped.



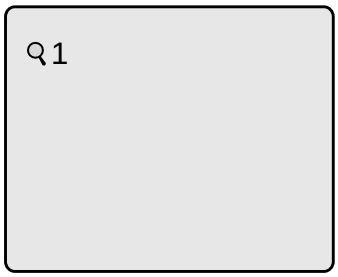
Note:

You can select the Pause, Slow or Search playback in the zoom mode. However, you cannot zoom in during the Slow or Search playback.

Zooming

This unit will allow you to zoom in on the frame image. You can then make selections by switching the position of the frame.

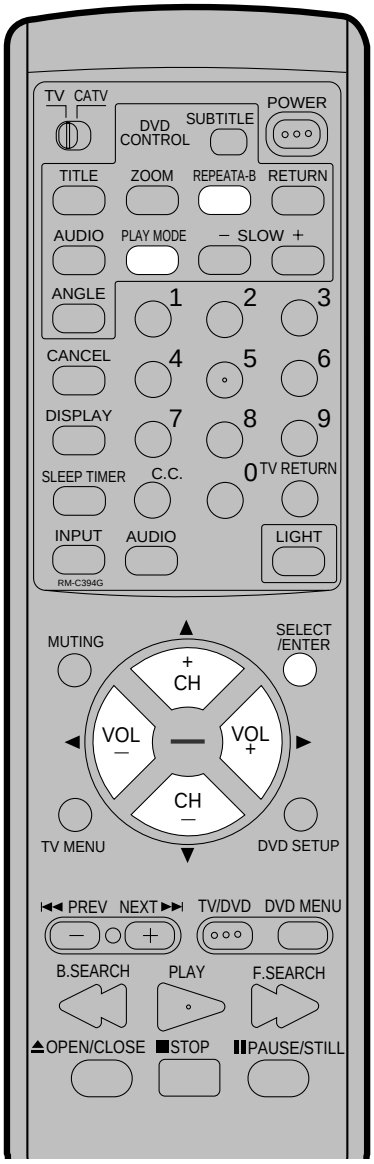
1 Press **ZOOM** during playback.
The centre part of the image will be zoomed in.
Each press of **ZOOM** will change the ZOOM 🔍1 (x 1.3), 🔍2 (x 1.5) and 🔍3 (x 2.0).



2 Press ▲/▼ or ◀/▶ to view a different part of the frame.
You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 In the zoom mode press **ZOOM** repeatedly to return to a 1:1 view (🔍 Off).

Repeat playback

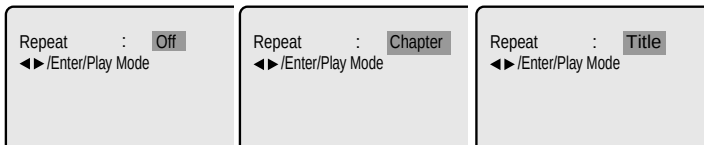


Title, Chapter, Track Playback

Press **PLAY MODE** during playback or stop mode.

DVD

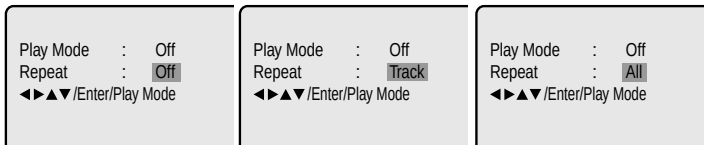
Press ◀ / ▶ or **ENTER** once or twice to select Chapter or Title.



Audio CD

Press ▼ to select Repeat.

Press ◀ / ▶ or **ENTER** once or twice to select Track or All.



Press **PLAY MODE** again to make the screen disappear.

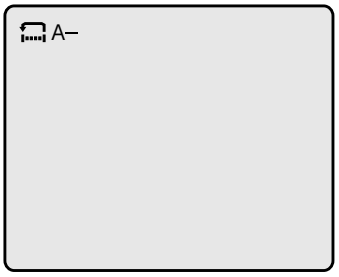
Press **PLAY** to start Repeat playback.

To resume normal playback, select Repeat Off.

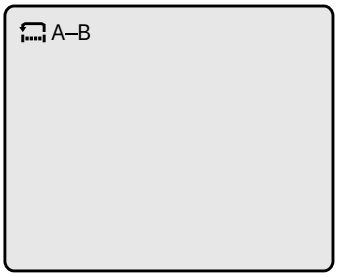
A-B Repeat Playback

A-B repeat playback allows you to repeat material between two selected points.

1 Press **REPEAT A-B** during playback.
The start point is selected.



2 Press **REPEAT A-B** again.
The end point is selected. Playback starts at the point that you selected. Playback stops at the end point, returns to Point A automatically, then starts again.



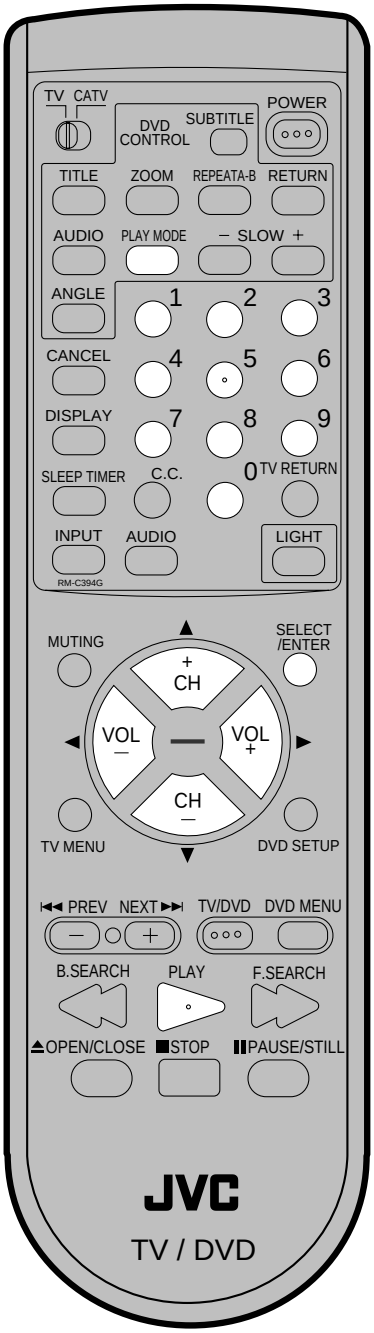
To resume normal playback press **REPEAT A-B** again.
"Off" appears on the screen.

Note:

- Some discs may not work with the repeat operation.
- In A-B repeat mode, subtitles near point A or B may not appear.
- During the A-B Repeat Playback the ANGLE feature will not operate.
- You may not be able to set A-B Repeat, depending on the scenes of the DVD.
- A-B repeat does not work with an interactive DVD.

Program playback/Random playback (Audio CD)

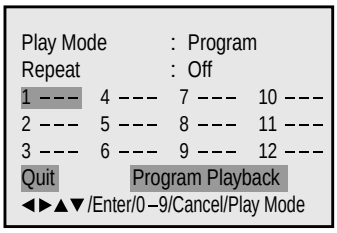
You can arrange the order of tracks on the disc.



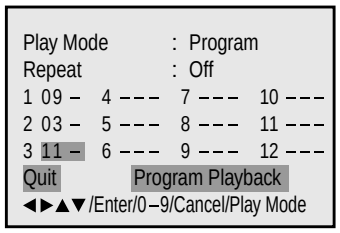
Program playback

1 Press **PLAY MODE** in the stop mode.

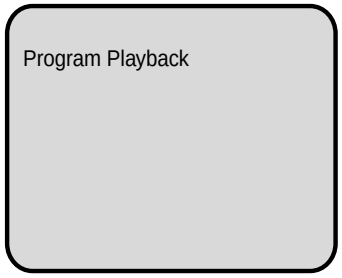
2 Press ▲/▼ to select Play Mode, then press ◀/▶ to select program.



3 Press ▲/▼ or ◀/▶ to select the programming position. Use **Numbered buttons (0-9)** to input the Track numbers.
• To program others, repeat Step 3.



4 Press ▲/▼ or ◀/▶ to select Program Playback and press **ENTER**.
The programmes you selected will start to playback in the order.
To return to normal playback, select Play Mode: Off.



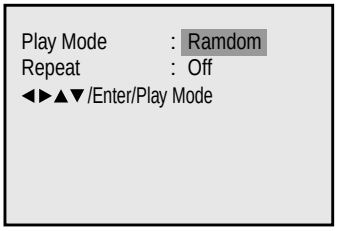
• To cancel program play, select Quit and press **ENTER**.
• The program is cancelled when you open the disc tray or turn the power off.

Random playback

1 Press **PLAY MODE** in the stop mode.

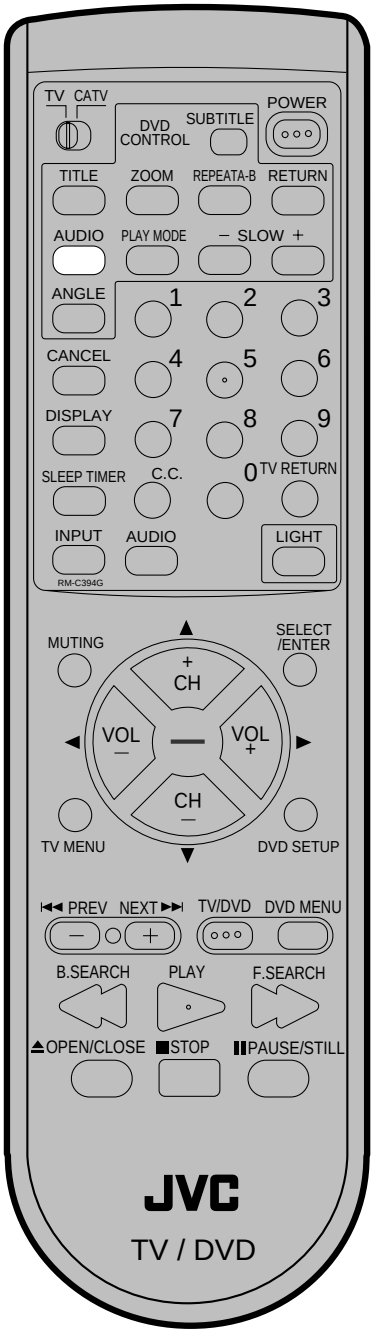
2 Press ▲/▼ to select Play Mode, then press ◀/▶ to select Random.

3 Press **PLAY**.



Changing soundtrack language

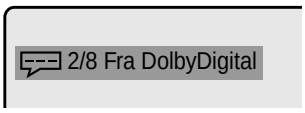
You can select the language when you play a multilingual disc.



Note:

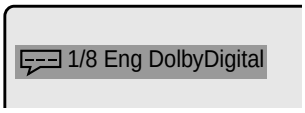
- If the desired language is not heard after pressing the button several times, the language is not recorded on the disc.
- Changing soundtrack language is cancelled when you open the disc tray or turn the power off. The initial default language or available language will be heard if the disc is played back again.

1 Press **AUDIO** during playback.

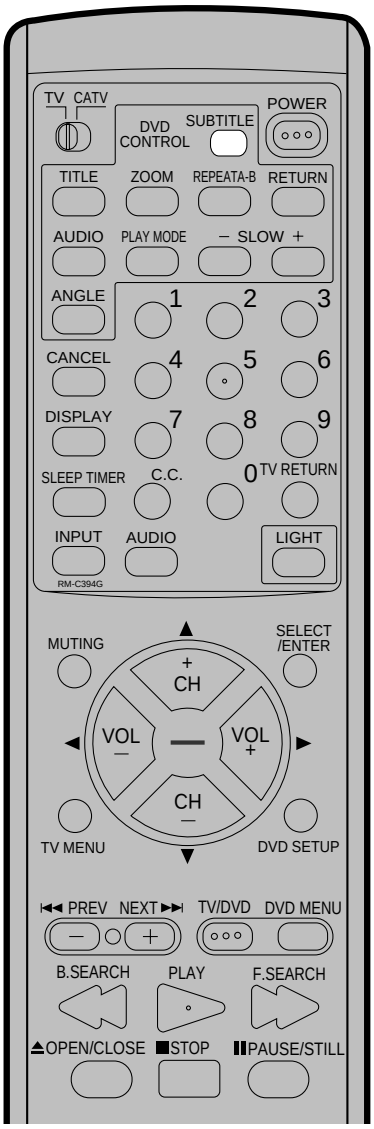


The current soundtrack language will appear.

2 Press **AUDIO** repeatedly until the desired language is selected.



The on-screen display will disappear after a few seconds.



Note:

- If desired language is not selected after pressing the button several times, the language is not recorded on the disc.
- Changing subtitle language is cancelled when you open the disc tray or turn the power off.
- Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it. Depending on the DVD, you may not be able to turn the subtitles off. Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. While playing the DVD, the subtitle may change when: -you open or close the disc tray -you change the title.
- In some cases, the subtitle language is not changed to the selected one immediately.

Turning the Subtitles On and Off

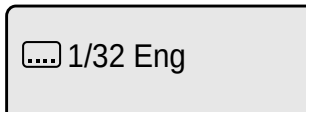
When playing back a disc recorded with subtitles, you can turn the subtitles on or off.

Press **SUBTITLE** during playback until “OFF” appears.

Changing the subtitle language

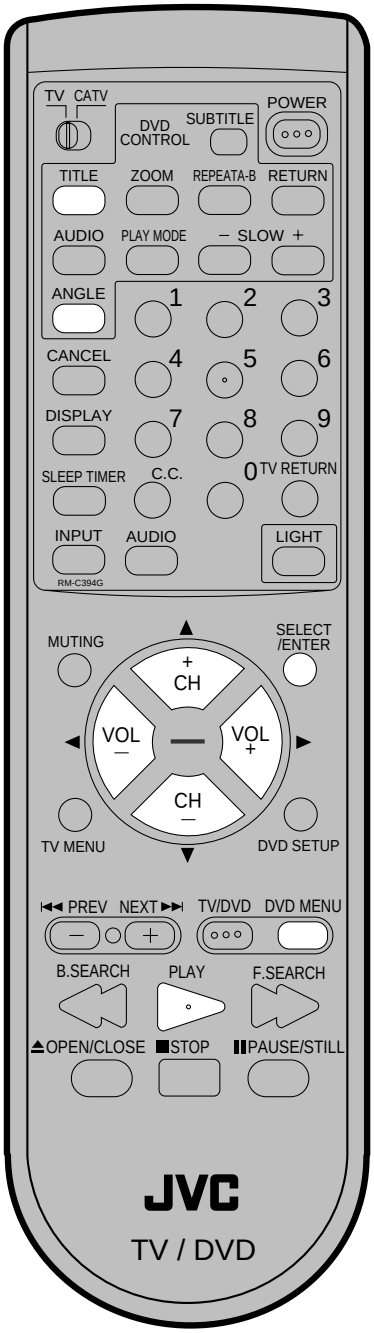
You can select the language when playing back a disc recorded with multi-lingual subtitles.

1 Press **SUBTITLE** repeatedly during playback until your desired language appears.



2 The on-screen display will disappear after a few seconds.

Changing angles / Title selection / DVD menu



Note:

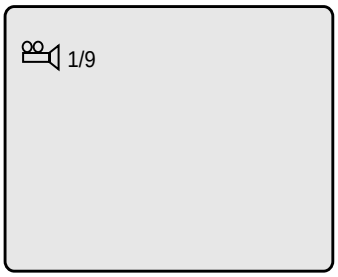
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.
- Depending on the DVD, you may not be able to select the title. Depending on the DVD, a "title menu" may simply be called a "menu" or "title" in the instructions supplied with the disc.

Changing Angles

When playing back a disc recorded with multi-angle facility, you can change the angle that you are viewing the scene from.

1 Press **ANGLE** during playback.

The current angle will appear.



2 Press **ANGLE** repeatedly until the desired angle is selected.

Title Selection

Two or more titles are recorded on some discs. If the title menu is recorded on the disc, you can select the desired title.

1 Press **TITLE** during playback.
Title menu appears on the screen.

2 Press ▲/▼ or ◀/▶ to select the desired title.

3 Press **ENTER** or **PLAY**.
The playback of the selected title will start.

DVD Menu

Some DVDs allow you to select the disc contents using the menu.
When you play back these DVDs, you can select the subtitle language and sound-track language,etc. using the DVD menu.

1 Press **DVD MENU** during playback.
The DVD menu appears on the screen.

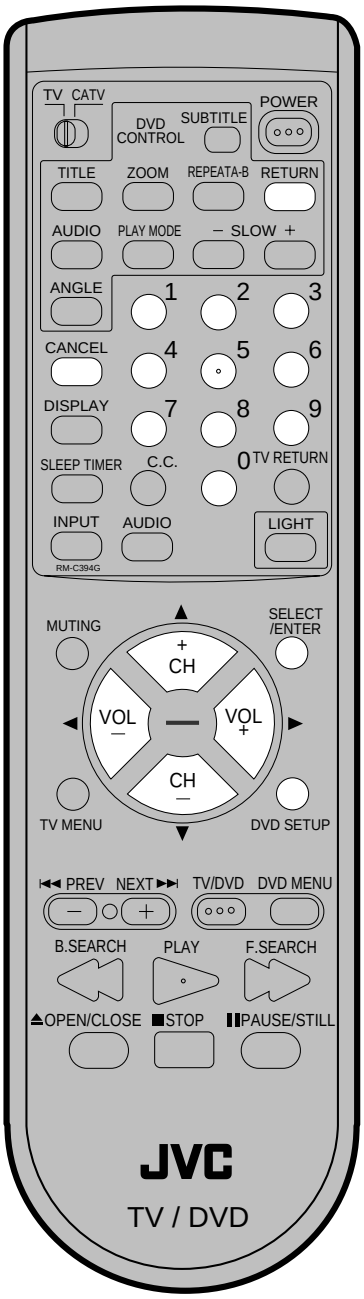
- Press **DVD MENU** again to resume playback at the scene when you pressed **DVD MENU**.

2 Press ▲/▼ or ◀/▶ to select the desired item.

3 Press **ENTER**.
The menu continues to another screen. Repeat steps **2** and **3** to set the item completely.

Parental control setting

Some discs are specified not suitable for children. Such discs can be limited not to play back with the unit.

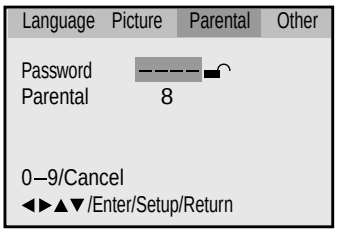


Note:

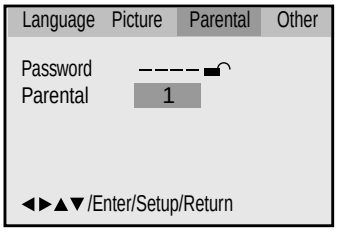
- **If each setup (P.35~42) has been completed, the unit can always be worked under the same conditions (especially with DVD discs).**
  Each setup will be retained in the memory if you turn the power off.
- Depending on the discs, the unit cannot limit playback.
- Some discs may not be encoded with specific rating level information though its disc jacket says "adult". For those discs, the age restriction will not work.

1 Press **DVD SETUP** in the stop mode.

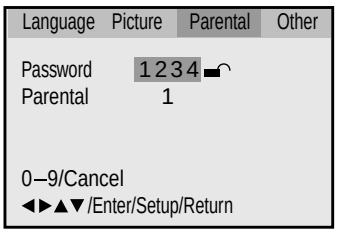
Press ◀ or ▶ to select Parental.
Then press ▼ or **ENTER**.



2 Press ▲ or ▼ to select Parental, then press ◀ or ▶ until the level you require appears.



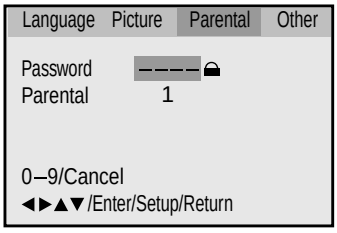
3 Press ▲ or ▼ to select Password.
Press **number buttons (0-9)** to input a 4-digit password.
Be sure to remember this number!



- If you input a wrong number, press **CANCEL**.

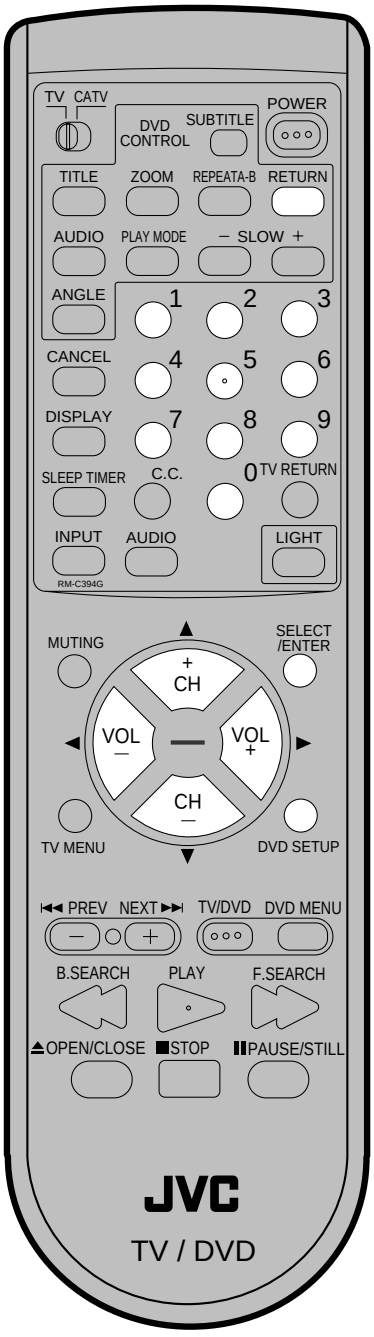
- **Level 1:** DVD software for adults cannot be played back.
- **Level 8:** All DVD software can be played back.
- Select from the level 1 to level 8. The limitation will be more severe as the level number is lower.

If you want to lock this Parental Level, press ▲ to select the Password.
Press **ENTER** to store the password.
Note: Now the rating is locked and the setting cannot be changed unless you enter the correct password.



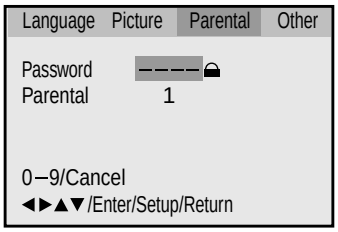
4 Press **DVD SETUP** or **RETURN** to remove the parental control screen.

To change the parental level

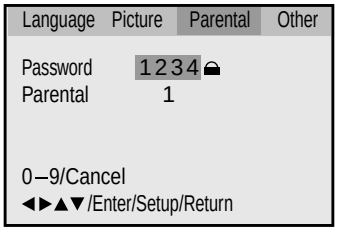


Note:
Do not forget the password. If you forget the password, contact the dealer that you purchased the unit from.

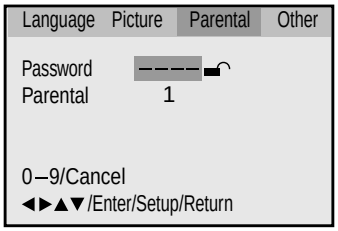
1 Press **DVD SETUP** in the stop mode or No Disc.
Press ◀ or ▶ to select Parental.
Then press ▼ or **ENTER**.



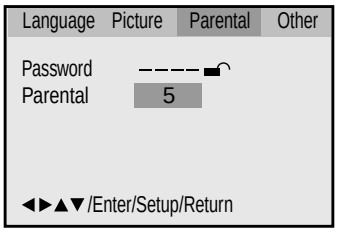
2 Press **number buttons (0-9)** to enter the password you have stored.



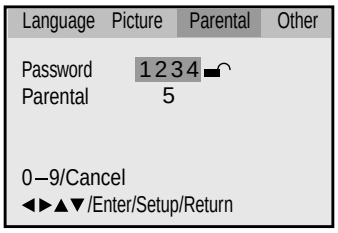
3 Press **ENTER**.
The rating is now unlocked.



4 Press ▲ or ▼ to select Parental, then press ◀ or ▶ to change the parental level.

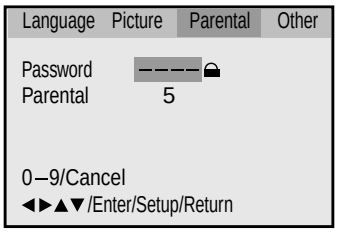


5 Press ▲ or ▼ to select Password, then press **number buttons (0-9)** to enter the password.
Note: You can change the password if you want.



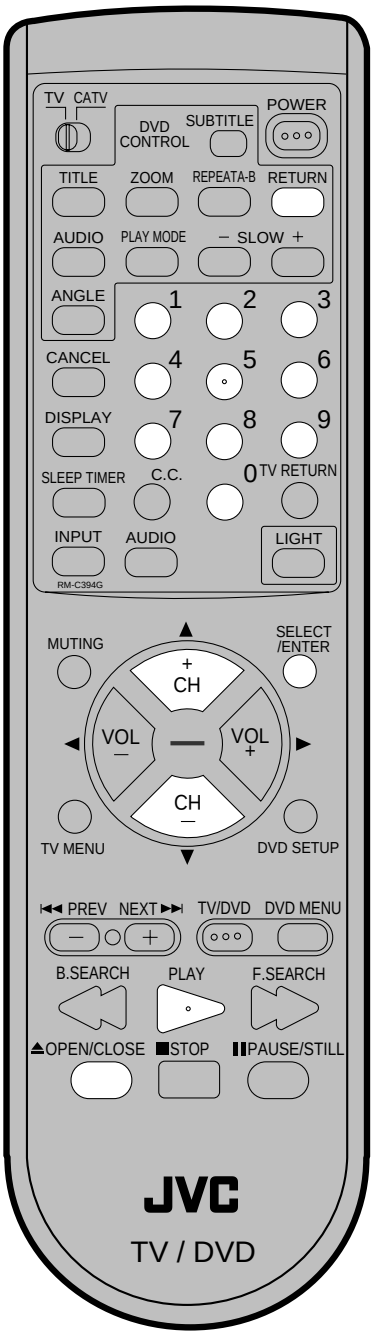
6 Press **ENTER**.
Now the parental level is changed and locked.

7 Press **DVD SETUP** or **RETURN** to remove the parental control screen.



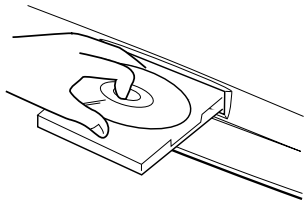
Temporary disabling of rating level by DVD disc

Depending on the DVD disc, the disc may try to temporarily cancel the rating level that you have set.
It is up to you to decide whether to cancel the rating level or not.

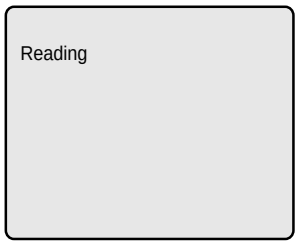


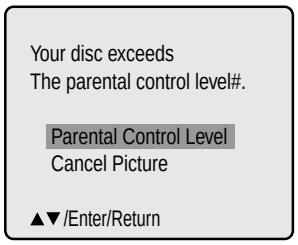
Note:
This temporary cancellation of rating level will be kept until the disc is ejected.
When the disc is ejected, the original rating level will be set again automatically.

1 Load a DVD disc and press **PLAY** or **OPEN/CLOSE** on the unit (see P.27).



2 If the DVD disc has been designed to temporarily cancel the Rating level, the screen which follows the "Reading" screen will change, depending on which disc is played. If you select "YES" with the SELECT key, "Your disc exceeds The parental control level#." screen will then appear.

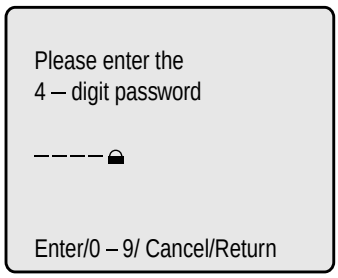




3 If you wish to cancel the set rating level temporarily, select "Parental Control Level" with ▲ or ▼, then press **SELECT**.
If the 4-digit password at step 3 on P.35 has been set, the password entering screen will appear as shown in step 4 below.
Alternatively, if the password has not been set, playback will commence. If you don't know (or have forgotten) the password, select "Cancel Picture".
The setting screen will disappear. Press **OPEN/CLOSE** to remove the disc.

4 Enter the password with **number buttons (0-9)**.
Then press **ENTER**.

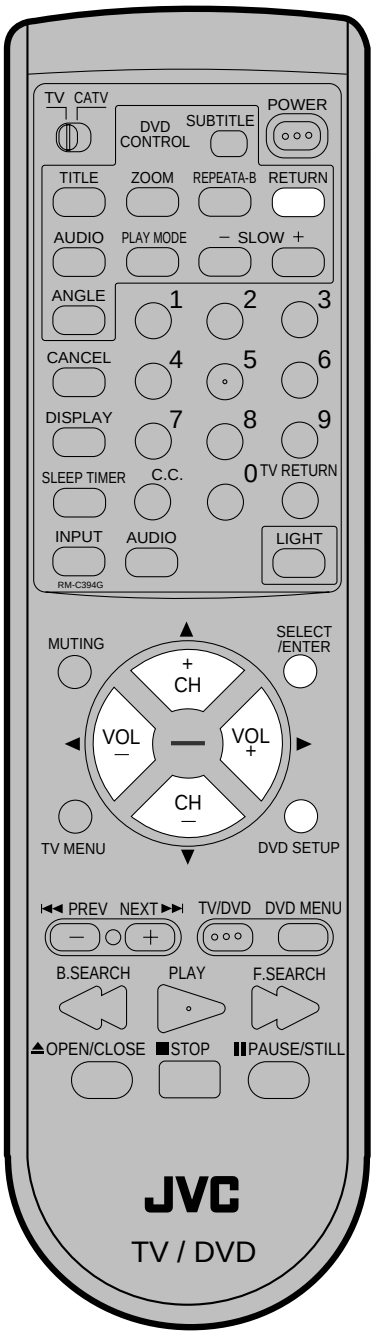
If you interrupt the entering, press **RETURN**.



5 Playback will commence if the entered password was correct.

Setting the aspect ratio of TV screen

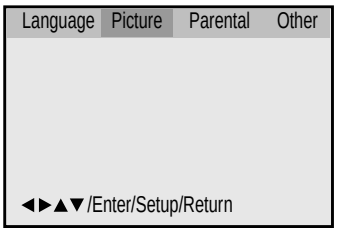
You can select the aspect ratio for your TV.



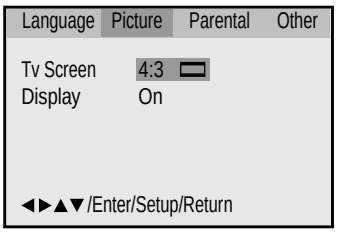
Note:
If the DVD disc is not formatted in the pan & scan style, it displays 4:3 style.

1 Press **DVD SETUP** in the stop mode or No Disc.

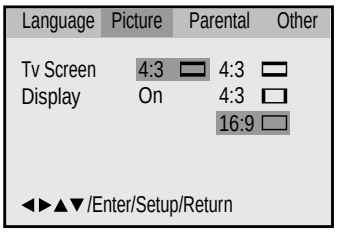
Press ◀ or ▶ to select Picture.



2 Press ▼ or **ENTER**, then press ▲ or ▼ to select Tv Screen.



3 Press ▶ or **ENTER**.
Press ▲ or ▼ to select your desired screen type, then press **ENTER**.



You have the following screen sizes to choose from:

4:3
Select this mode when connecting to a conventional TV. When playing back a wide screen-DVD disc, it displays the wide picture with black bands at the top and bottom of screen.

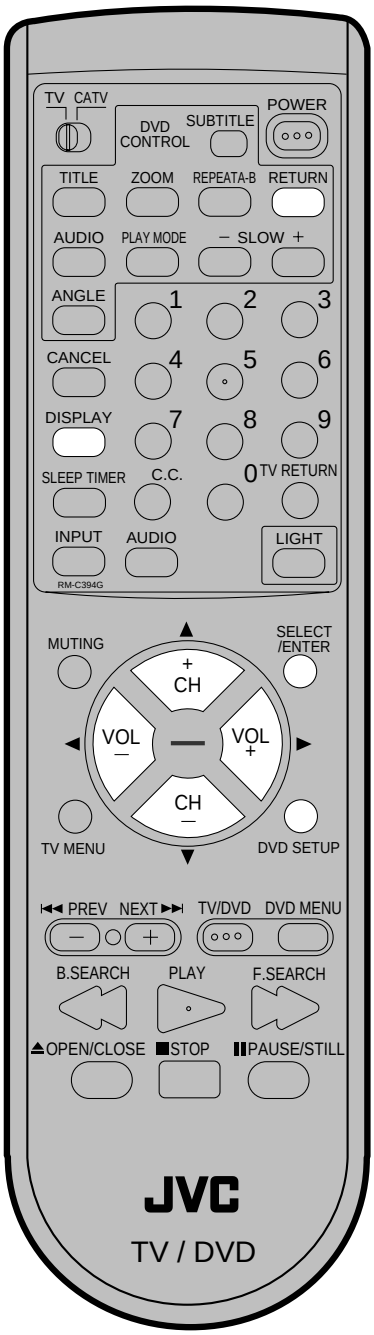
4:3 PAN SCAN
It displays the wide picture on the whole screen with left and right edges automatically cut off.

16:9 WIDE SCREEN
Select this mode when connecting to a wide-screen TV. A wide screen picture is displayed full size.

4 To make SETUP screen disappear, press **DVD SETUP** or **RETURN** while the SETUP screen is being displayed.

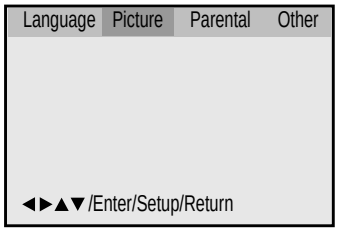
Setting on Screen display/Status display of Disc

On screen display can be switched on or off when you press the buttons.

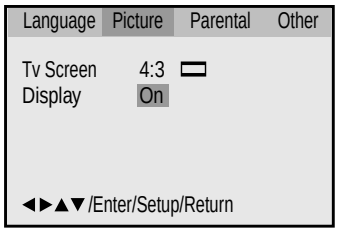


1 Press **DVD SETUP** in the stop mode or No Disc.

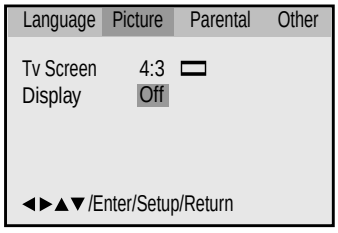
Press ◀ or ▶ to select Picture.



2 Press ▼ or **ENTER**, then press ▲ or ▼ to select Display.



3 Press ◀ / ▶ or **ENTER** to select ON or OFF.



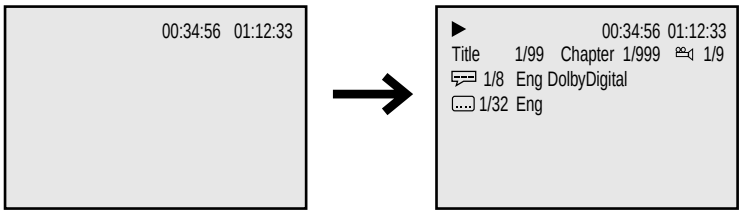
ON: On screen displays appear when you press the buttons (factory setting).
OFF: On screen displays do not appear when you press any buttons.

4 To make SETUP screen disappear, press **DVD SETUP** or **RETURN** while the SETUP screen is being displayed.

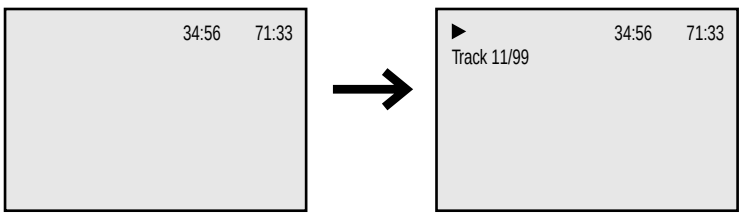
Status display of Disc

Each Press of **DISPLAY**, the status display of the disc will appear on the screen and change as follows.

DVD



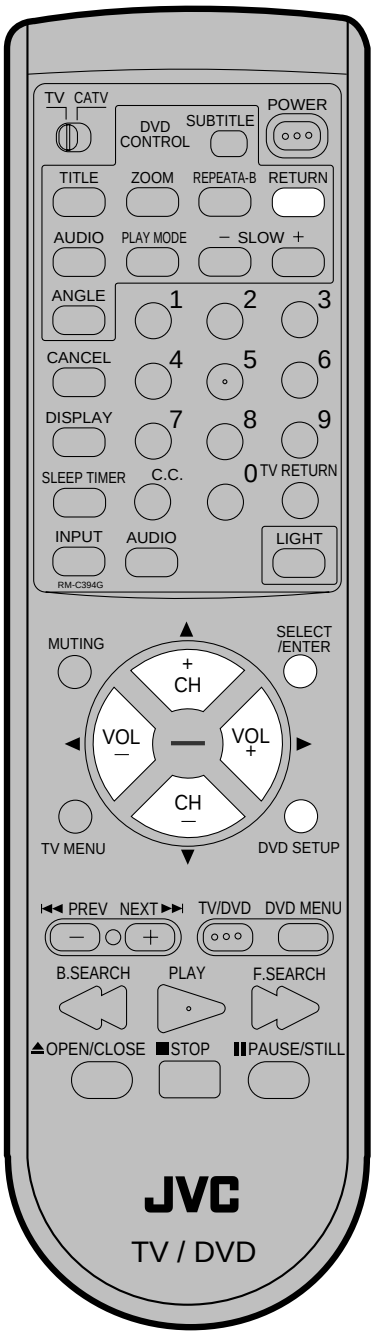
CD



To make status display disappear, press **DISPLAY** again.

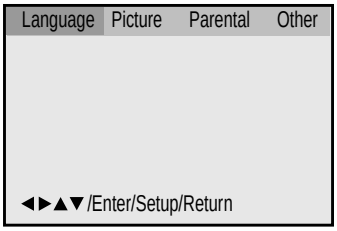
Setting menu language

You can select the language of the disc menu messages of DVDs.

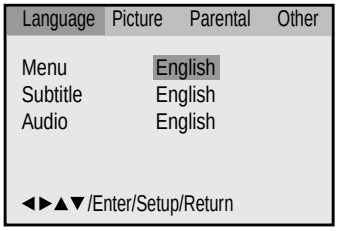


1 Press **DVD SETUP** in the stop mode or No Disc.

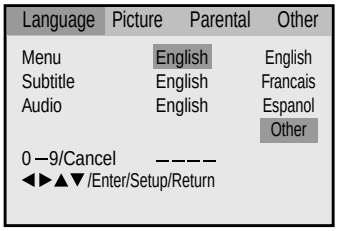
Press ◀ or ▶ to select Language.



2 Press ▼ or **ENTER**, then press ▲ or ▼ to select Menu.



3 Press ▶ or **ENTER**.
Press ▲ or ▼ to select your desired language, then press **ENTER**.



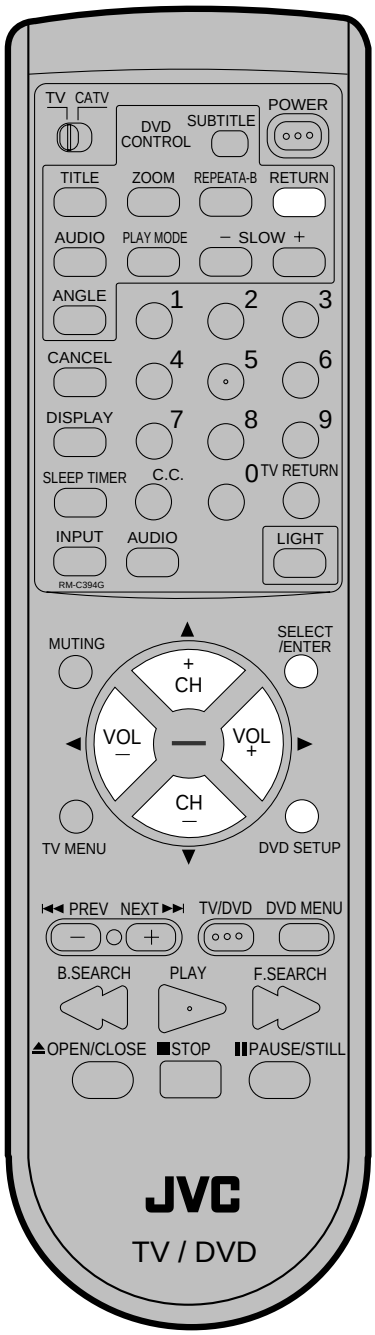
English, Francais, Espanol
The selected language is the first-priority Menu language.

OTHER: Other language can be selected (See the Language Code List on page 43).

4 To make SETUP screen disappear, press **DVD SETUP** or **RETURN** while the SETUP screen is being displayed.

Setting subtitle language

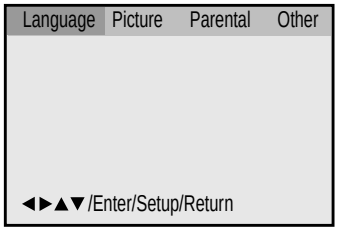
The same subtitle language can always be selected even if you replace the disc or turn the power off.



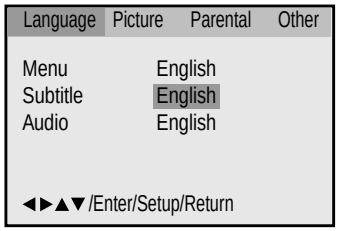
Note:

If the selected language is not recorded on the disc, the first-priority language is selected.

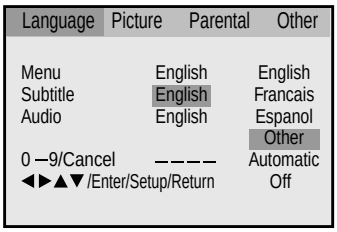
1 Press **DVD SETUP** in the stop mode or No Disc.
Press ◀ or ▶ to select Language.



2 Press ▼ or **ENTER**, then press ▲ or ▼ to select Subtitle.



3 Press ▶ or **ENTER**.
Press ▲ or ▼ to select your desired language, then press **ENTER**.



English, Francais, Espanol
The subtitle is displayed with the selected language if it is recorded on the disc.

OTHER:
If you want to select another language, enter the language code (see the language code list on page 43).

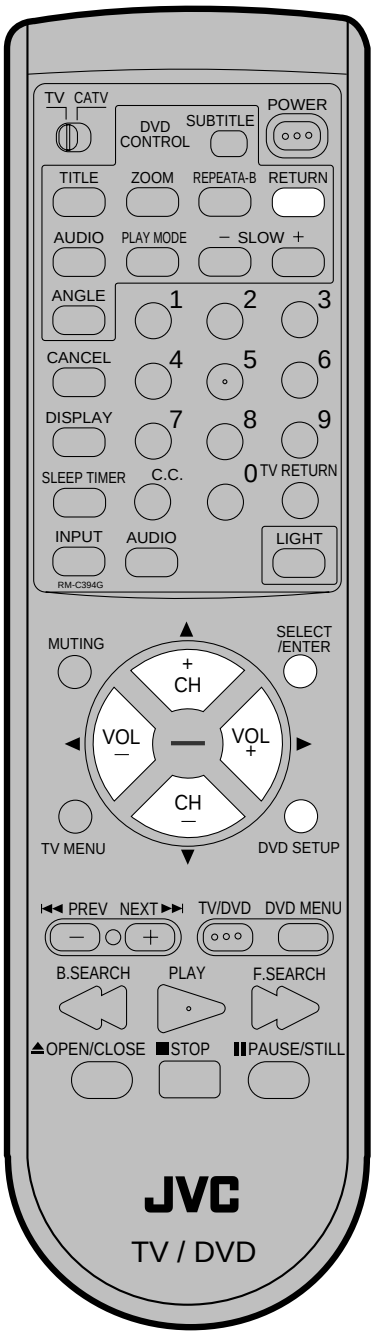
AUTOMATIC:
- The unit will automatically select the same language in the AUDIO setting.
- When the unit selects the same language as the AUDIO, the subtitles will not appear during playback.
- When you do not use the same language as the AUDIO, the subtitles will appear during playback.

Off:
Subtitles do not appear.

4 To make SETUP screen disappear, press **DVD SETUP** or **RETURN** while the SETUP screen is being displayed.

Setting audio soundtrack language

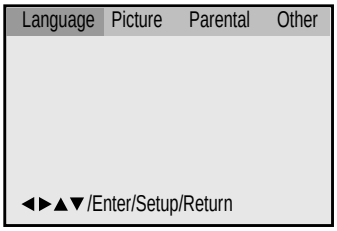
The same audio soundtrack language can always be selected by your unit even if you replace the disc or turn the power off.



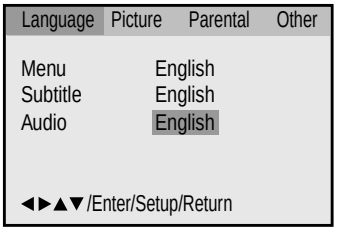
Note:

If the selected language is not recorded on the disc, the original language will be heard.

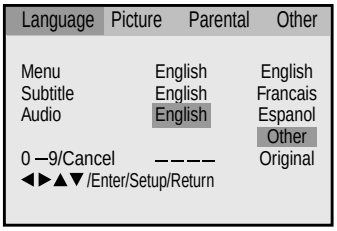
1 Press **DVD SETUP** in the stop mode or No Disc.
Press ◀ or ▶ to select Language.



2 Press ▼ or **ENTER**, then press ▲ or ▼ to select Audio.



3 Press ▶ or **ENTER**.
Press ▲ or ▼ to select your desired Audio Language, then press **ENTER**.



- **English, Francais, Espanol:**
  The language you have selected will play if it is recorded on the disc.
- **OTHER:** If you want to select another language, enter the language code (See the Language Code List on page 43).
- **ORIGINAL:** The unit will select the first priority language of each disc.

4 To make SETUP screen disappear, press **DVD SETUP** or **RETURN** while the SETUP screen is being displayed.

Language Code List

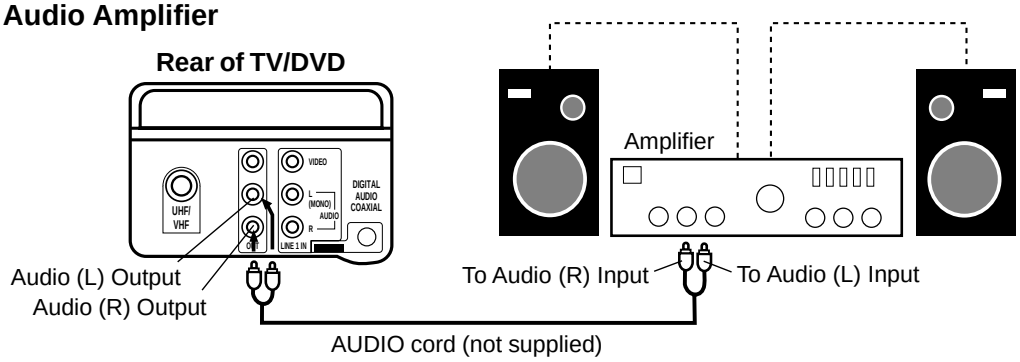
Enter the appropriate code number for the initial settings "AUDIO", "SUBTITLE" and/or "MENU LANGUAGE" (see pages 40-42).

Language Name	Code	Language Name	Code	Language Name	Code	Language Name	Code
Abkhazian	1112	Fiji	1620	Lingala	2224	Singhalese	2919
Afar	1111	Finnish	1619	Lithuanian	2230	Slovak	2921
Afrikaans	1116	French	1628	Macedonian	2321	Slovenian	2922
Albanian	2927	Frisian	1635	Malagasy	2317	Somali	2925
Amharic	1123	Galician	1722	Malay	2329	Spanish	1529
Arabic	1128	Georgian	2111	Malayalam	2322	Sundanese	2931
Armenian	1835	German	1415	Maltese	2330	Swahili	2933
Assamese	1129	Greek	1522	Maori	2319	Swedish	2932
Aymara	1135	Greenlandic	2122	Marathi	2328	Tagalog	3022
Azerbaijani	1136	Guarani	1724	Moldavian	2325	Tajik	3017
Bashkir	1211	Gujarati	1731	Mongolian	2324	Tamil	3011
Basque	1531	Hausa	1811	Nauru	2411	Tatar	3030
Bengali; Bangla	1224	Hebrew	1933	Nepali	2415	Telugu	3015
Bhutani	1436	Hindi	1819	Norwegian	2425	Thai	3018
Bihari	1218	Hungarian	1831	Oriya	2528	Tibetan	1225
Breton	1228	Icelandic	1929	Panjabi	2611	Tigrinya	3019
Bulgarian	1217	Indonesian	1924	Pashto, Pushto	2629	Tonga	3025
Burmese	2335	Interlingua	1911	Persian	1611	Turkish	3028
Byelorussian	1215	Irish	1711	Polish	2622	Turkmen	3021
Cambodian	2123	Italian	1930	Portuguese	2630	Twi	3033
Catalan	1311	Japanese	2011	Quechua	2731	Ukrainian	3121
Chinese	3618	Javanese	2033	Rhaeto-Romance	2823	Urdu	3128
Corsican	1325	Kannada	2124	Romanian	2825	Uzbek	3136
Croatian	1828	Kashmiri	2129	Russian	2831	Vietnamese	3219
Czech	1329	Kazakh	2121	Samoan	2923	Volapük	3225
Danish	1411	Kirghiz	2135	Sanskrit	2911	Welsh	1335
Dutch	2422	Korean	2125	Scots Gaelic	1714	Wolof	3325
English	1524	Kurdish	2131	Serbian	2928	Xhosa	3418
Esperanto	1525	Laothian	2225	Serbo-Croatian	2918	Yiddish	2019
Estonian	1530	Latin	2211	Shona	2924	Yoruba	3525
Faroese	1625	Latvian, Lettish	2232	Sindhi	2914	Zulu	3631

Connections to other equipments

The exact arrangement you use to interconnect various video and audio components to the TV/DVD is dependent on the model and features of each component. Check the Owner's Manual provided with each component for the location of video and audio inputs and outputs.

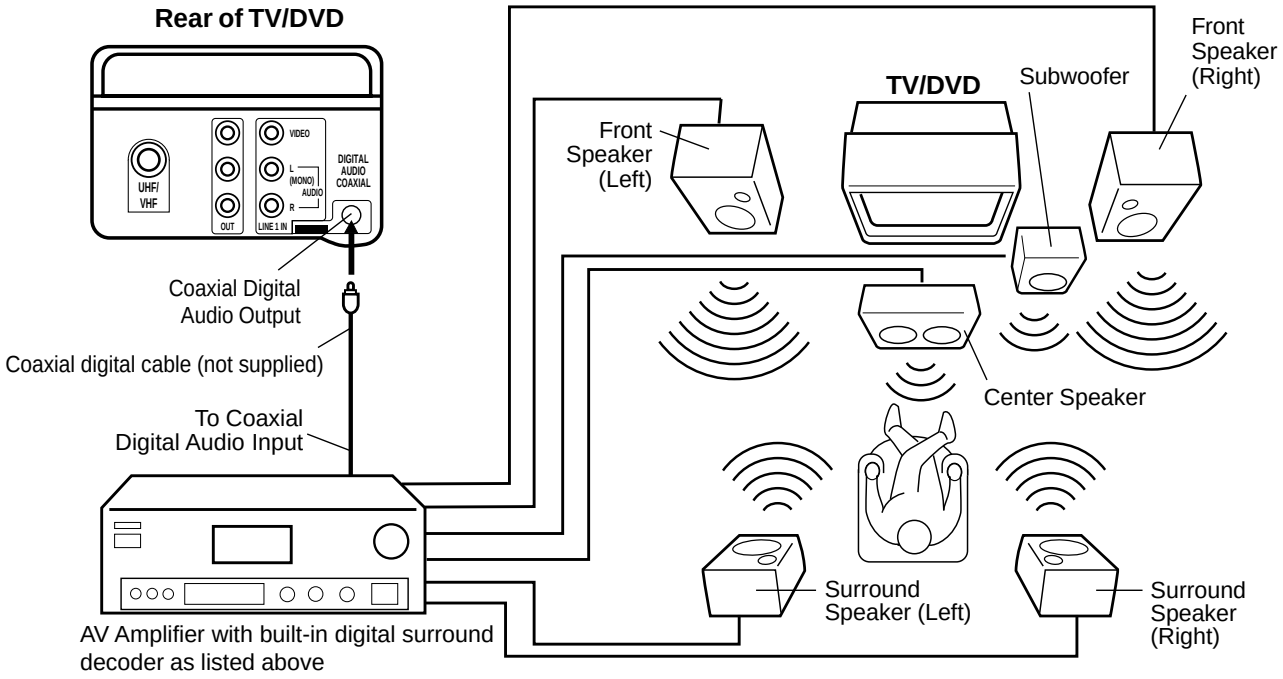
Using an Audio Amplifier



Using an AV Amplifier with built-in digital surround

If you are using an Amplifier with a built-in digital surround as follows, you can enjoy the various audio systems including Dolby Digital Surround audio that sounds just like the movie.

Connect an AV amplifier with built-in Dolby Digital decoder, DTS decoder, MPEG decoder or etc as shown below.



***** Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories, Inc. All rights reserved.

***** “DTS” and “DTS Digital Out” are trademarks of Digital Theater Systems, Inc.

NOTE:

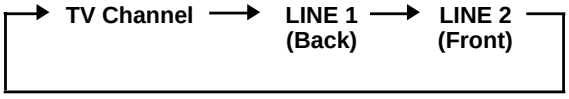
- When you make the connections above, do not set DOLBY DIGITAL to DOLBY DIGITAL, MPEG to MPEG to ON on the AV Amplifier. If you do, a loud noise will suddenly come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When playing DTS-encoded CDs, only noise will be heard from the speakers or analogue stereo outputs.
- Some DTS decoders which do not support DVD-DTS interface may not work properly with the unit.

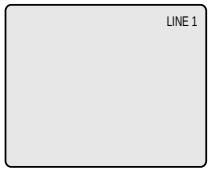
Using the audio/video inputs

If you connect the TV/DVD to VCR, camcorder or TV game, you can select by pressing **INPUT**.

Press **INPUT** repeatedly to select the desired mode.
"LINE1", "LINE2" or TV channel will display on the screen for 4 seconds.

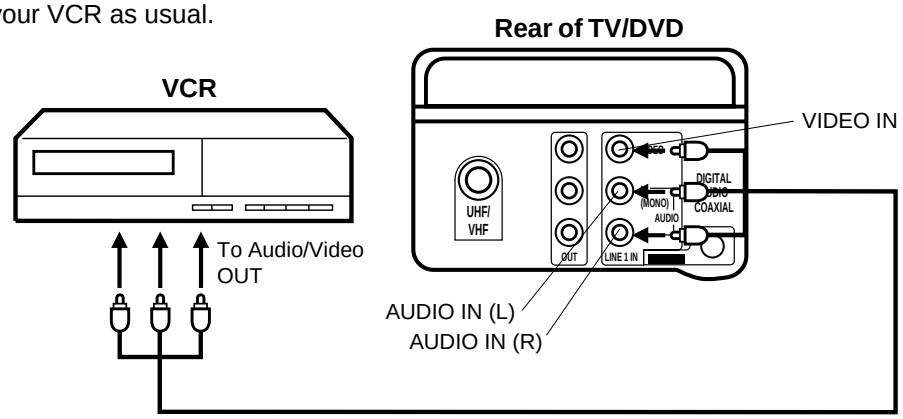
NOTE:
In the DVD mode this key will not operate.





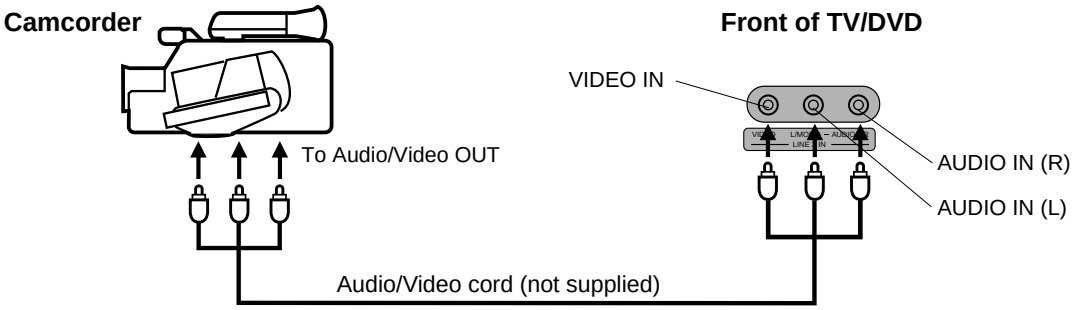
1. To connect the TV/DVD to a VCR

Press the **INPUT** to select the desired mode to use the TV as a monitor.
Operate your VCR as usual.

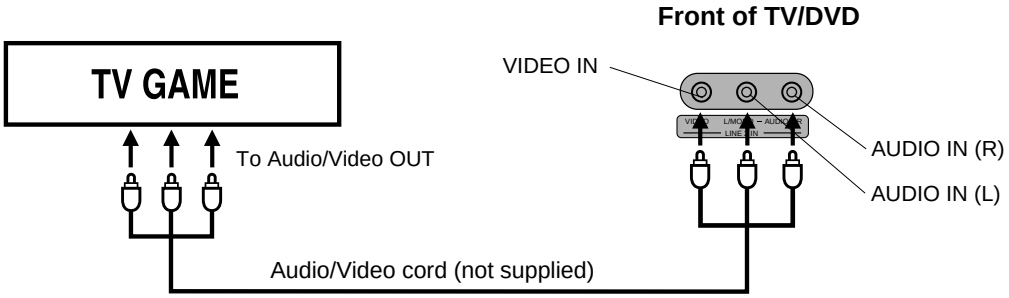


2. To connect the TV to a camcorder

To playback from the camcorder, connect the camcorder to the TV/DVD as shown.



3. To connect the TV to a TV Game



Problems and troubleshooting

Use the following check list for troubleshooting when you have problems with your unit. Consult your local dealer or service outlet if problems persist.
Be sure all connections are properly made when using with other units.

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
POWER		
TV/DVD does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Power is off, check fuse or circuit breaker. • Unplug unit, then plug it back in.	5 10 5
TV BROADCAST RECEPTION		
Poor sound or No sound	• Station or CATV experiencing problems, tune to another station. • Check Volume adjustments (Volume and Muting). • Check for sources of possible interference.	14 14 48
Poor picture or No picture	• Station or CATV experiencing problems, tune to another station. • Check antenna or CATV connections, reorient antenna. • Check for sources of possible interference. • Check picture control adjustments.	14 11,12 48 22
Poor reception on some channels	• Station or CATV experiencing problems, tune to another station. • Station signal is weak, reorient antenna to receive weaker station. • Check for sources of possible interference.	14 11,12 48
Poor color or no color	• Station or CATV experiencing problems, tune to another station. • Make sure channels are set into memory. • Check picture control adjustments. • Check antenna or CATV connections, reorient antenna. • Check for sources of possible interference.	14 18 22 11,12 48
Picture wobbles or drifts	• Station or CATV experiencing problems, tune to another station. • Make sure channels are set into memory. • CATV company is scrambling signal. • Check antenna orientation.	14 18 – 11
No CATV reception	• Check all CATV connections. • Set TV/CATV menu option to the CATV mode. • Station or CATV system problems, try another station.	12 17 14
Horizontal or diagonal bars on screen	• Check antenna connections, reorient antenna. • Check for sources of possible interference.	11,12 48
No reception above channel 13	• Make sure TV/CATV menu option is in the appropriate mode. • If using antenna, check UHF antenna connections.	17 11
TV shuts off	• No broadcast on station tuned. • Sleep Timer is set. • Power interrupted.	18 15 –
Closed - Caption is not activated.	• TV station experiencing problems or program tuned is not closed captioned. Try another channel. • Check CATV connection or VHF/UHF antenna, reposition or rotate antenna. • Press C.C. button to turn on the closed caption decoder.	18 11,12 17
Display is not shown in your language.	• Select proper language in the menu options.	13

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
DVD		
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play CD-ROMs, etc.	27 25 –
No picture	• TV/AV selector is not set correctly.	26
No sound	• Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode. • Select the correct Audio Output position on AV amplifier.	– 28 44
Picture is distorted during CUE or REVIEW.	• The picture will be distorted occasionally.	–
Stopping playback, search, slow-motion play, repeat play, or program play, etc. cannot be performed.	• Some discs may not do some of the functions.	–
No 4:3 (16:9) picture	• The setup does not match your TV.	38
No on-screen display	• Select Display On.	39
No surround sound	• The setup does not match your stereo system.	44
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the RATING LEVEL setup.	35,36
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	41,42
No subtitle	• Some discs have no subtitles. • Subtitles are cleared. Press SUBTITLE.	41
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	34
✋ appears on the screen.	• The function is prohibited with the unit or the disc.	–
REMOTE CONTROL		–
The remote control does not function.	• Aim at the remote control at the remote sensor. • Operate within Approx. 5 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly.	10

Reception disturbances

Most types of television interference can be remedied by adjusting the height and position of the VHF/UHF antenna. Outdoor antennas are recommended for best results. The most common types of television interference are shown below. If one of these symptoms appear when the TV/DVD is connected to a Cable TV system, the disturbance may be caused by the local Cable TV company broadcast.

IGNITION

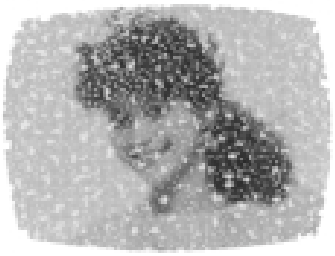
Black spots or horizontal streaks may appear, the picture may flutter or drift. Usually caused by interference from automobile ignition systems, neon lamps or AC powered tools and appliances such as drills or hair dryers.

GHOSTS

Ghosts are caused by the television signal following two paths. One is the direct path and the other is reflected by tall buildings, hills or other large objects. Changing the direction or position of the antenna may improve the reception.

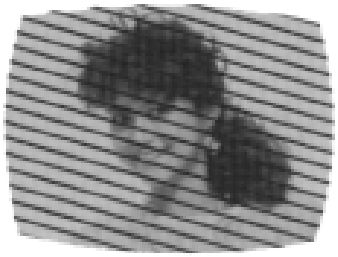
SNOW

If the TV/VCR is located far from the TV station, in a fringe reception area where the signal is weak, small dots may appear in the picture. If the signal is extremely weak, the installation of a larger external antenna may be necessary.



RADIO FREQUENCY INTERFERENCE (RFI)

Caused by two-way radios, this type of interference produces moving ripples or diagonal streaks in the picture. Some cases may cause a loss of contrast in the picture. Changing the direction and position of the antenna or installing an RFI filter may improve the picture.



PICTURE SIZE VARIATION

A slight picture size variation is normal when you adjust the CONTRAST or BRIGHTNESS settings.

CARE AND MAINTENANCE

To prevent fire or shock hazard, disconnect the TV/DVD from the power source before cleaning.
The finish on the cabinet may be cleaned with mild soap and a soft, damp cloth and cared for as other furniture.
Use caution when cleaning or wiping the plastic parts.

Specifications

GENERAL

Power supply:	AC 120V 60Hz
Power consumption:	Operation: 120W Stand by: 8W
Weight:	56.1lbs (25.5 kg)
Dimensions:	Width : 22-5/8 inches (574 mm) Height: 20-3/8 inches (515 mm) Depth : 19-1/8 inches (483 mm)

TELEVISION

Picture tube:	Type 20 (508 mm diagonal)
Tuner type:	Quartz PLL Frequency Synthesized
Receiving channels:	VHF 2-13 UHF 14-69 CATV 14-36 (A)-(W) 37-59 (AA)-(WW) 60-85 (AAA)-(ZZZ) 86-94 (86)-(94) 95-99 (A-5)-(A-1) 100-125 (100)-(125) 01 (5A)
Antenna input:	VHF/UHF In 75 ohm coaxial
Speaker:	3" (76 mm), 8 ohm x 2
Audio output power:	2.5W + 2.5W

DVD/CD player

Signal system:	NTSC
Applicable disc:	1. DVD (12cm, 8cm) 2. CD (12cm, 8cm)
Audio characteristics:	DVD: 4Hz - 22KHz
Frequency response:	CD: 4Hz - 20KHz
S/N Ratio:	90dB
Harmonic distortion:	0.01%
Wow and flutter:	Below Measurable Level
Dynamic range:	96dB
Input/Output:	Inputs : Video : (RCA) 1 Vp-p/75ohm Audio : (RCA) –8 dB/50Kohm Outputs : Video : (RCA) 1 Vp-p/75ohm Audio : (RCA) –8 dB/1Kohm
Headphone Jack:	3.5mm Stereo mini-jack
Digital audio out:	0.5Vp-p 75ohms terminated
Pickup:	CD : Wavelength: 775 - 815 nm Maximum output power: 0.5 mW DVD : Wavelength: 650 - 666 nm Maximum output power: 2.0 mW

ACCESSORIES: Remote control x 1
Batteries (2 x AA)

Appendix (Remote programming)

REMOTE PROGRAMMING

Setting the CATV Codes

You can program your remote to operate your cable box, satellite receiver by using the instructions and codes listed below. If the equipment does not respond to any of the codes listed below or to the code search function, use the remote control supplied by the manufacturer.

Cable Box or Satellite setup

The remote control is programmed with CATV and/or Satellite codes for power on, power off, channel up, channel down, and 10 key operation.

1) Find the CATV/Satellite brand from the list of codes shown below.
2) Slide the 2-way selector switch to “CATV ”.
3) Press and hold down the DISPLAY button.
4) With the DISPLAY button held down, enter the first code number listed using the 10 key pad.
5) Release the DISPLAY button.
6) Confirm the operation of the Cable Box/Satellite receiver.

- If your CATV or Satellite box does not respond to the first code, try the others listed. If it does not respond to any code, try the Search Codes Function as shown below.

Cable Box	CODES	Cable Box	CODES
ABC	024	Pulsar	051, 032
Archer	032, 025	Puser	032
Cableview	051, 032	RCA	061, 070
Citizen	022, 051	Realistic	032
Curtis	058, 059	Regal	058, 064, 040, 041, 042, 045, 068
Diamond	024, 032, 025	Regency	034
Eagle	029	Rembrandt	037, 032, 051, 038
Eastern	034	Samsung	051
GC Brand	032, 051	Scientific Atlanta	057, 058, 059
Gemini	022, 043	SLMark	051, 047
General Instrument	065, 024, 025, 026, 027, 020, 021, 022, 057, 023	Sprucer	051, 056
Hamlin	040, 041, 042, 045, 058, 064	Stargate	032, 051
Hitachi	049, 024	Telecaption	067
Jerrold	065, 024, 025, 026, 027, 020,021, 022, 057, 023	Teleview	047, 051
Macom	049, 050, 051, 054	Texscan	044
Magnavox	033	Tocom	035, 036, 066
Memorex	030	Toshiba	050
Movietime	032, 051	Unika	032, 025
Oak	039, 037, 048	Universal	022, 032
Panasonic	055, 056, 060, 071	Videoway	052
Paragon	063	Viewstar	029, 030
Philips	028, 029, 030, 052, 053, 031, 069	Zenith	063, 046
Pioneer	047, 062	Zenith/Drake Satellite	046

Digital Satellite Systems	CODES	Digital Satellite Systems	CODES
Echostar	100, 113, 114	Philips	102, 103
Express VU	100, 113	Primestar	108
G.E.	106	Proscan	106, 109, 110
G.I.	108	RCA	106, 109, 110
Gradiente	112	Sony	107
Hitachi	104, 111	Star Choice	104, 108
HNS (Hughes)	104	Toshiba	101
Pranasonic	105	Uniden	102, 103

Cable/Satellite Search Codes Function:

1) Slide the 2-Way Mode Selector switch to CATV.
2) Press the TV POWER and TV RETURN buttons. Hold for at least three seconds and release.
3) Press TV POWER, see if the CATV or Satellite box responds.
4) If there was a response, press TV RETURN. The operating codes are now set. If there was no response, repeat Step 3. If you repeat Step 3 a total of 52 times without a response, use the remote control which came with the equipment.
5) Press TV RETURN to exit.

MEMO

JVC®

JVC COMPANY OF AMERICA
Division of U.S. JVC CORP.
1700 Valley Road
Wayne, New Jersey 07470

JVC CANADA, INC.
21 Finchdene Square
Scarborough, Ontario
Canada M1X 1A7

5870201A K
01/03

Printed in Thailand